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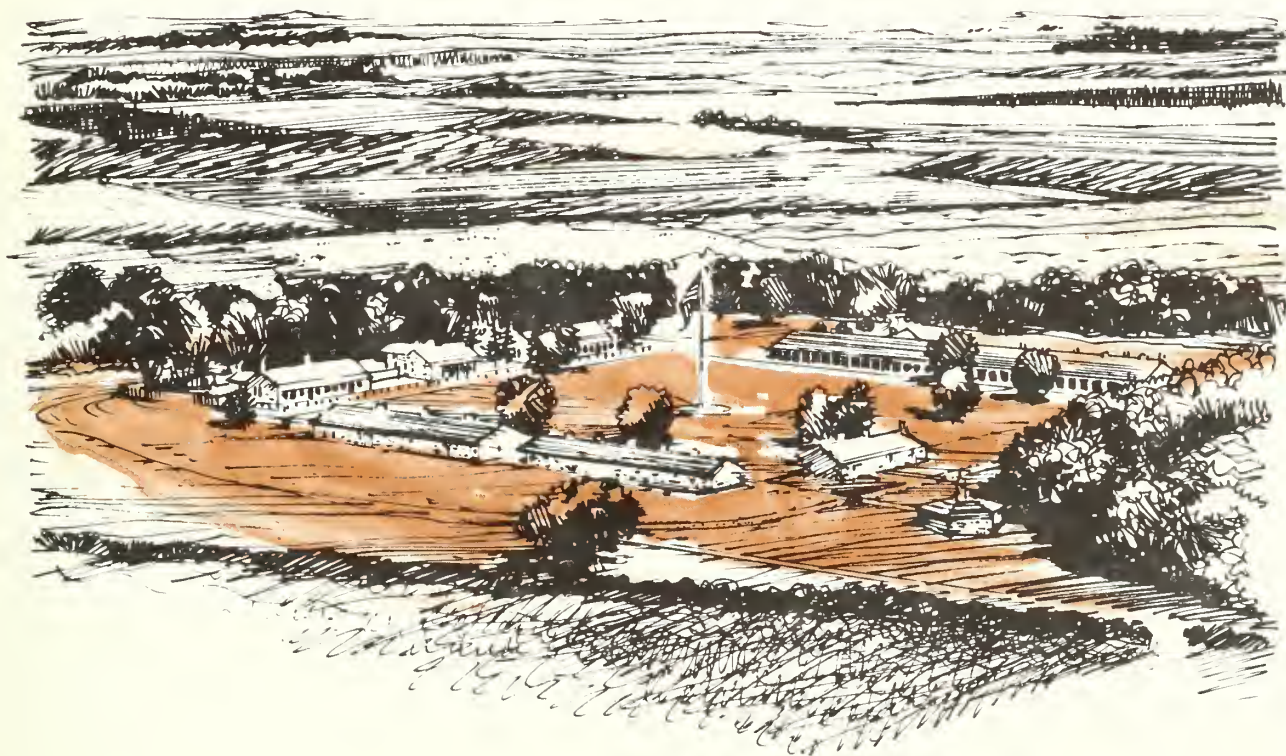


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Draft  
General Management Plan Amendment  
Development Concept Plan  
Environmental Assessment



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**FORT LARNED**  
National Historic Site • Kansas

UNIVERSITY OF GEORGIA

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Draft  
General Management Plan Amendment  
Development Concept Plan  
Environmental Assessment

June 1994

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# **FORT LARNED**

National Historic Site • Kansas



## SUMMARY

2003  
5  
This *Draft General Management Plan Amendment, Development Concept Plan, and Environmental Assessment* is intended to guide the management of Fort Larned National Historic Site for the next decade. It seeks to enable park management to fulfill the intent of the enabling legislation, which is to commemorate the significant role played by Fort Larned in the opening of the west. This document presents five alternatives, including a no-action alternative (alternative one) that serves as a basis for comparison, and a preferred alternative selected by the regional director. All alternatives expand the Santa Fe Trail cultural theme in the interpretive programs, and none provide park housing on site.

Alternative two would adaptively use historic structures (HS). No major construction would take place, but the maintenance building would be expanded and a new maintenance storage facility would be provided. Administration and visitor services would be separated, with administration moved to officer's quarters HS-9 and visitor services expanded in barracks HS-1. No modern intrusions would be removed from the historic core area. Land use patterns would be unchanged and no changes would be made in management zoning.

In alternative three, all the historic structures would be restored. The visitor center, administration, operations, and curation facilities would be moved out of the historic core to a new visitor center/administration building. A new entrance road would be built. Interpretation would be expanded to increase the understanding of the relationships between the fort, the Santa Fe Trail, the native inhabitants, and the environment. Signs would be improved. There would be very little adaptive reuse of historic structures. The maintenance building and storage yard would be expanded. All modern intrusions (such as bridges, irrigation ditches, and parking) would be removed if possible. Overhead utilities would be buried. The integrity and authenticity of the park's surviving historic resources would be emphasized. Some disturbance to vegetation would be expected. Management zoning would be modified to implement this alternative.

Alternative four would restore all existing historic structures and reconstruct those structures which are key to the interpretive mission of the park. Modern uses of historic structures would be terminated and those functions removed from the historic core area. A new visitor center/administration building would be constructed outside the historic core area. A new, larger maintenance area would be constructed; it would include space for all existing functions plus heated paint storage, vehicle storage, and increased work space. A storage facility would also be constructed to house maintenance materials and equipment. The new maintenance area would also include a new water treatment facility and distribution system, a new fuel storage facility, and a new access road.

The preferred alternative takes the provisions of alternative three intact, and adds to them only the reconstructions proposed under alternative four.

Impacts of alternative two include some permanent soil and vegetation disturbance, but restored areas would result in a net gain of vegetation and wildlife habitat. Cultural resources would be largely unaffected beyond providing enhanced accessibility, continuing the restoration of historic structures, and the removal or screening of visual intrusions.

## SUMMARY

Alternative three would have positive impacts on the wetland at the bridge removal site. There would be short term impacts to soils and vegetation during construction, but there would be a net gain in vegetation and wildlife habitat due to restoration in other areas of the historic site. Visitor experience would be improved by the removal of on site intrusions, increased accessibility, and the restoration of all historic structures to the historic period.

Alternative four would have the same positive impacts as alternative three.

The preferred alternative would also have the same positive impacts as alternative three, since it is essentially a combination of three and four.

Tables and maps are included, and appendixes include a site selection analysis and design guidelines.

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## **INTRODUCTION**

### **PURPOSE OF AND NEED FOR THE PLAN**

#### **Purpose**

Fort Larned was authorized on August 31, 1964, by Public Law 88-541. According to the enabling legislation, the purpose of the park is ". . . to commemorate the significant role played by Fort Larned in the opening of the west." The acquisition of up to 750 acres of land for the park, either in fee simple ownership or in owned interest in the land (i.e., an easement), was authorized. This purpose statement did not describe the direction that commemoration should take or how the commemoration should be accomplished. This lack of definition became apparent as the planning project got underway. To clarify and focus the purpose statement quoted above, the staff and planning team added the phrase "preserving, protecting, interpreting, and administering the resources of Fort Larned for the public as a National Historic Site" to the purpose statement.

#### **Background**

Fort Larned National Historic Site is located on Kansas Highway 156, six miles west of the city of Larned in Pawnee County, Kansas. The site includes 718.39 acres of land composed of 410.46 acres in fee simple ownership, 269.20 acres of scenic easements, and 38.73 acres owned by the state.

Larned is the county seat of Pawnee County. Major Kansas cities close to the site include Salina, 100 miles northeast; Hutchinson, 75 miles east; Wichita, 125 miles southeast; Hays, 60 miles north; Garden City, 100 miles west; and Dodge City, 60 miles southwest.

The fort today consists of nine original sandstone structures and a reconstructed blockhouse along the south bank of the Pawnee River (a dry streambed most of the year), 8 miles above the confluence with the Arkansas River. The boundary of the fort property is west of an all-weather county road and north of Kansas Highway 156.

The modern park maintenance facility is located west of the fort on the west side of county road 976, completely separate from the historic core of the site. All other operational, administrative, and visitor functions are housed within the historic structures of the fort. A satellite area about five miles south and one mile west of the fort preserves ruts from the Santa Fe Trail traffic and 44 acres of virgin prairie.

#### **Significance**

Fort Larned became a focal point for both friendly relations and conflicts between Indians and non-Indians on the plains before and after the Civil War. It has retained much of its historic setting and has authentic resources with which to interpret the history and cultures associated with Fort Larned and the Santa Fe Trail corridor in the last half of the nineteenth century.

## Issues

Concern about the impacts of increased visitation on the fort's historic structures and grounds prompted this study. Currently, all visitor facilities are housed in the historic structures and there are several modern intrusions on the historic scene. These uses and intrusions compromise both the historic scene and the visitor experience. This general management plan amendment addresses the need for a new visitor center to serve as the primary interpretive center for both the central portion of the Santa Fe Trail and the park. The 1978 master plan did not anticipate the current visitor center needs, other than to point out the probable development zone for future parking west of the fort complex. The 1978 plan must be updated to reflect current conditions as well as to address several specific issues.

As proposed in the *Comprehensive Management and Use Plan for the Santa Fe Trail*, a new visitor center building is needed at Fort Larned. Neither the existing visitor center nor the administrative offices have expansion space in their present shared location, barracks HS-1. The interpretive program will present an expanded story of the central portion of the Santa Fe Trail, the Plains Indians, and the diverse cultural interaction at the fort. This expansion will probably result in greater public interest, require more exhibit space, and necessitate staff increases. This general management plan amendment will determine if a new visitor center is needed, its location, its size, and the facilities it would contain. To make these determinations, the interpretive program must be reviewed to verify its adequacy for existing and anticipated interpretive needs. This requires an interpretive prospectus, which is being completed concurrently with this document. If there is to be a new visitor center, the impact on historic structures must be determined and uses for the vacated historic structures identified. If interpretive programs call for restoration of historic structures or the reconstruction of missing buildings from the historic period, the levels of restoration or reconstruction will be identified in the alternatives.

All restoration and/or reconstruction of historic structures and the cultural landscape would be accomplished in accordance with *National Park Service Management Policies* and *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (1992). All studies necessary to support restoration/reconstruction undertakings, such as a cultural landscape report, historic structures reports or updates of the historic structures and historic furnishings reports, an archeological survey, and a data recovery program would be programmed and completed to ensure that adequate data is available.

Current access to the site and circulation within the fort are detrimental to the historic scene and the visitor experience. Facilities are not laid out for the convenience of the visitor or park personnel, and any changes in facility location could require the realignment of circulation routes. Specific problems include inadequate accessibility for people with disabilities, the highway bridge access into the historic core area, adequate storage for historic artifacts, fee collection, truck use of the picnic area, and distance of the parking lot to the fort. The picnic area has been evaluated previously, but it is still questionable whether it should be retained or relocated. External threats include flood hazards, tornadoes, surrounding land development, and visual impacts to the historic scene, such as overhead power lines and contemporary farm buildings.

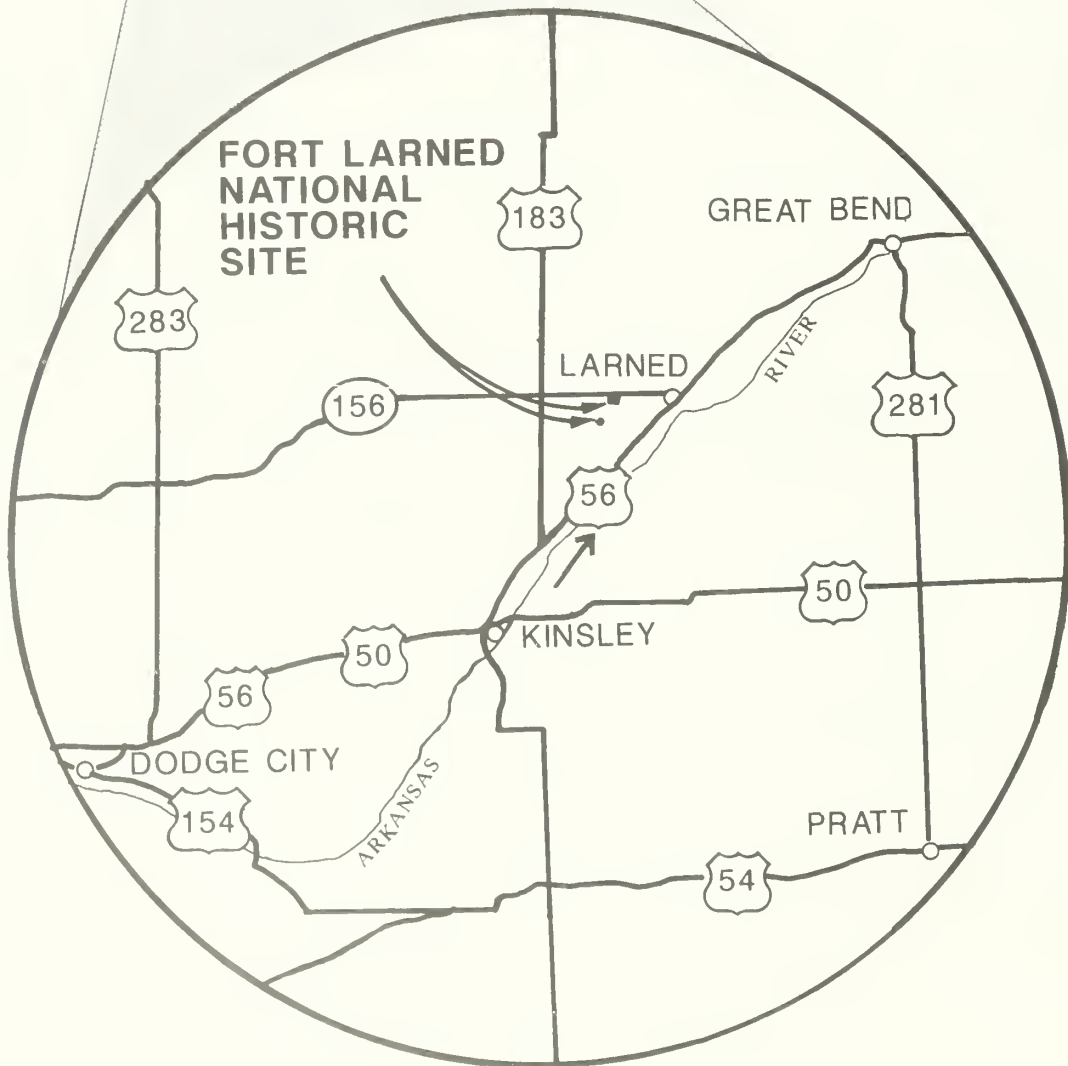
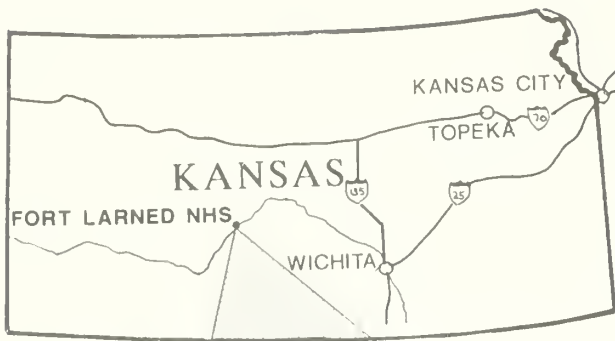


## LOCATION

FORT LARNED NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • 425 • 20,014A • DEC 93



## VICINITY

### FORT LARNED NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE  
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## **MANAGEMENT OBJECTIVES**

Objectives from the park's statement for management guided the preparation and analysis of the general management plan amendment for Fort Larned.

- To identify, evaluate, preserve, protect, restore, and maintain the park's cultural and natural resources in a manner consistent with legislative mandates and National Park Service policies.
- To recreate, to the extent possible consistent with management policies and historical documentation, an atmosphere of 1860s and 1870s Fort Larned, an isolated military post along the Santa Fe Trail, thereby providing the visitor with an opportunity to learn about and understand its role in the opening of the West.
- To eliminate or minimize modern intrusions within the historic zone and its viewshed.
- To provide visitors with a varied, comprehensive, and effective interpretive program, focusing on the interactions between the frontier army, travelers on the Santa Fe Trail, and the Plains Indians.
- To establish and implement a comprehensive education program in support of the "Parks as Classrooms" initiative that will feature a variety of curriculum-based education programs designed at individual grade levels.
- To provide visitors and employees with a safe park environment free of unnecessary risk of injury or loss, balanced with the consideration for maintaining the historic integrity of park resources.
- To manage all park activities and resources in a manner that will accomplish the mission of the park.

## ALTERNATIVES

This section describes the range of alternatives considered for the development and management of Fort Larned and the subsequent preferred alternative selected. The options range from no action to the restoration and reconstruction of the fort to its condition during the historic period. Alternatives one through four represent the range of actions that could reasonably be undertaken at Fort Larned. The preferred alternative is a combination of several facets of alternatives three and four that best addresses the full spectrum of issues and problems identified at the fort and therefore provides the best framework to guide Fort Larned into the next decade.

An interpretive prospectus will be prepared concurrent with the final general management plan amendment.

Flood mitigation measures common to all alternatives that would protect property from flood would involve removing the property and resources from the floodplain. This could be accomplished in several ways.

- The entire site could be raised above the 100-year flood level by placing the buildings on fill.
- A protective levee or dike could be constructed around the property and resources to the height of the 100-year flood plus some additional height for "freeboard" or buffer.
- The resources could be relocated to a new site above the 100-year flood level.
- Major impoundments could be constructed upstream to capture and hold storm runoff and release it at acceptable flow rates to avoid flooding.

None of the options listed above (and there may be more) are appropriate to the site, its historic context, and the policies of the National Park Service. Some mitigation was attempted during the fort's ranch period, but this was limited to a low levee along the south bank of the Pawnee River that offers only partial flood protection. It is not recommended that this levee be removed. Several offsite, upstream impoundments for stock ponds and water recreation have modified the runoff characteristics of the Pawnee River watershed, especially since the mid-1970s. These developments have probably reduced flood frequency by small, unquantifiable amounts. The watershed is so large, and the streambed gradient so flat, that flash floods are virtually unknown along this river. Flood conditions along the Pawnee River generally take several days of specific weather conditions to develop, and are therefore predictable, providing several days warning to those downstream.

All of the alternatives recognize that flood protection begins with the acknowledgement that flooding will occur. That recognition is followed by an intended course of action. Development of a flood emergency plan includes determination of the amount of advance notice, the distance to high ground, the level of the historic high water mark, the typical duration of the flooding, and the ability of the affected resources (and materials) to withstand immersion. The emphasis is typically not on flood prevention but on establishment of a procedure to deal with the buildings, their contents, and other objects threatened by the water. The plan must also

address the cleanup of the resources after the flood event, which must be accomplished as soon as possible.

An evacuation schedule and procedure should be prepared that designates the resources to be moved to a site outside the projected flood area. The plan should designate, in priority order, the resources, equipment, and records to be evacuated. Suitable storage facilities should be arranged and reserved on an emergency need basis prior to any flood emergency. The proper equipment to move the items should also be pre-arranged. Responsibilities should be assigned among the park staff based upon the priorities determined for evacuation. Plans should take into account that safe areas may be as near as upper floors or attics.

In planning the cleanup, the types and amount of debris anticipated to be deposited must be assessed so that the necessary techniques, equipment, personnel, and cleanup schedule can be generated and in place for immediate reaction. The location of water sources for hosing out the buildings, the need for window shutters to protect the glass against water pressures, and the installation of drains and removable floorboards for draining the wash are examples of design features that must be considered. This advance planning could be incorporated with routine building repairs as the opportunities present themselves. When undertaking rehabilitation work, materials could be chosen that are able to withstand saturation for the anticipated duration of the flooding.

The protection of historic buildings in known flood areas must involve advance planning, immediate action, and rapid cleanup after the flood. To prevent the entry of flood water into the buildings would require reconfiguration of the historic landscape.

Fort Larned was flooded in 1993. An incomplete flood control structure under construction as part of the county road bridge replacement west of the park allowed the high water to exit the river channel flow north along the west side of the county road until it came to a low point. There the water crossed into the northwest corner of the park and flowed in a sheet to the east. The water crossed the entrance road and reentered the Pawnee River channel east of the historic core. The levee inside the park was never topped by the water, which never reached the historic core or the new visitor center site proposed in alternatives three and four. The flood control structure has since been completed and, as a result, any future floods will differ from the 1993 and other previous floods.

As noted in appendix A, the "Hydrologic Analysis of the Pawnee River" prepared by the NPS Water Resources Division, a small irrigation dam located .25 mile downstream from the fort is almost completely silted in and no longer serves for irrigation. The sediment impounded by the dam has raised the river bed between 9 and 10 feet in the vicinity of the fort. Removal of this dam would allow natural erosion and downcutting to slowly return the river channel to its pre-dam elevation, which was just below the local water table elevation and would therefore expose the stream flow. The resulting channel would approximate the stream's appearance during the fort's historic period. It would also increase the stream's flow capacity, thereby reducing the potential for floods to enter the park. The dam is not on National Park Service property, and there is no proposal to remove it at this time, but the park staff will maintain contact with the owner of the dam and will explore the possibility of removing it or breaching it in the future.

## THE PREFERRED ALTERNATIVE

The preferred alternative selected by the regional director combines all of the provisions described in alternative three with the reconstruction of structures no longer extant but deemed key to the interpretive mission of the park described in alternative four.

All historic structures and the historic core area would be restored to the historic period (1868-1878) appearance. The stable, adjutant's office, and sutler's complex would be reconstructed as they appeared during the historic period. All restoration and/or reconstruction of historic structures and the cultural landscape would be accomplished in accordance with *National Park Service Management Policies* and *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (NPS 1992). All studies necessary to support restoration/reconstruction undertakings, such as a cultural landscape report, historic structures reports or updates of the historic structures and historic furnishings reports, an archeological survey, and a data recovery program would be programmed and completed to ensure adequate data availability.

A new visitor center/administrative building would be developed outside the historic core area to house the visitor center, administration, operations, and curation functions. The maintenance complex would be expanded. On-site modern intrusions on the historic scene, such as vehicle traffic, the highway bridge, irrigation ditches, and the accessible parking lot would be removed (if possible) or visually screened. Mitigation of off-site visual intrusions, such as overhead power lines and farm structures, will be addressed in the cultural landscape report. Existing uses necessary for the operation of the site but not open or visible to the visitor would be retained within the core, including buried utilities, storm shelters, restrooms, and the water purification system.

The development costs for the preferred alternative would include the alternative three costs, the alternative four costs for reconstructing the three buildings, and the costs for any additional studies required to accomplish the work in alternatives three and four. Advance and project planning costs would be in addition to that total. The detailed cost breakdowns for these development items are described in the alternative three and four cost estimates. The total cost of the preferred alternative would be \$17,531,400, including \$12,921,600 for the alternative three portion of the preferred alternative development, \$1,914,200 for the reconstruction and other studies required from alternative four, and \$2,695,600 for advance and project planning.

The work required under the preferred alternative would be accomplished in phases, with the additional studies, maintenance expansion, and visitor center work accomplished in the first phase. The second phase would include the majority of the restoration and reconstruction required, plus the removal of visual intrusions and revegetation of disturbed areas. A third phase would be available to complete the work of phase two.

## **ALTERNATIVE ONE: NO ACTION**

### **GENERAL**

The 1978 master plan would remain the guide for current park operations and management. Visitors would continue to enjoy the integrity of the historic structures and their architectural features, the native prairie vegetation, and living history demonstrations. They would still be able to understand the fort's role in protecting the Kansas portion of the Santa Fe Trail and acting as a center for the distribution of annuities to the Plains Indians.

However, several issues and problems that prompted this planning study would remain unresolved. There would be no relocation of operations or facilities from the historic core area and current uses of the historic buildings would continue. Restoration and reconstruction would be limited to that described in the 1978 plan. The access and circulation systems would remain as they are. There would be no removal of visual intrusions, and no improvement in the fee collection system and in the protection or display of the historic vehicles. The picnic area would continue to function as it does now, and threats from external sources (such as viewshed intrusions, flood and storm hazards) would continue. The current interpretive program would continue with increased interpretation of the fort's role in the Santa Fe Trail.

The historic horse-drawn U.S. Army ambulance and freight wagons would continue to be located outdoors, exposed to the elements. The Conestoga wagon on loan from Bent's Old Fort National Historic Site would still be displayed inside the commissary quartermaster warehouse.

### **LAND USE AND MANAGEMENT**

#### **Existing Land Use**

Land uses surrounding Fort Larned are and have been exclusively agricultural for generations. These uses are expected to remain the same under all the alternatives.

#### **Management Zoning**

The land use and management pattern within the park would not be altered or affected under this alternative, and there would be no changes in the existing management zoning.

### **RESOURCES MANAGEMENT**

The National Park Service would continue to preserve and protect the cultural and natural resources of the park. Cultural resources would continue to be emphasized in accordance with applicable laws, regulations, and policies.

## **Natural Resources**

The area surrounding Fort Larned relates a part of the story and adds to the visitor experience. The natural and cultural resources are almost inseparable when describing the military fort life, Santa Fe Trail trade, or the life of the Plains Indians. Existing park policies have protected as much of the historic landform as possible through the purchase of visual easements and the revegetation of the park lands with native prairie plant species, which have in turn attracted wildlife.

Fort Larned is surrounded by agricultural lands that have been dedicated to farming and ranching for generations. Most of the original plant communities were altered by intensive cultivation. Woodlands are limited to areas along streams because of dry soil conditions. Portions of the riverbank have been diked or modified to contain or change stream flow.

Natural resources management would continue under the current resource management plan (1988) and the prairie management plan (1986), pending preparation of a cultural landscape report.

## **Cultural Resources**

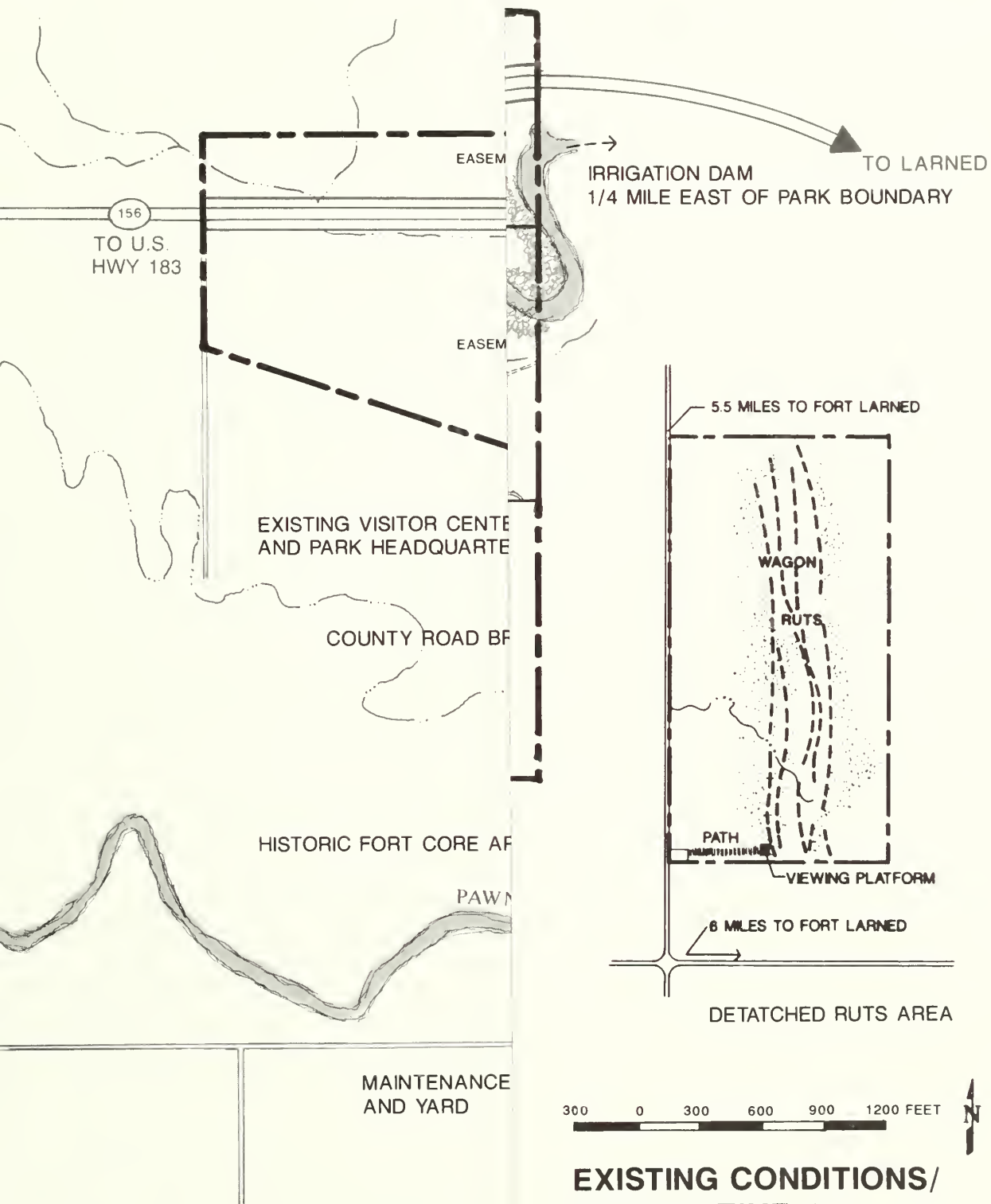
Cultural resource management at Fort Larned focuses on the protection, restoration, and maintenance of the historic resources. Education and visitor experience are central to the mission of the national historic site. The fort preserves an important piece of American history, commemorates a part of the western migration, and allows a backward glance at the lives of soldiers, Plains Indians, and those who passed through on the way west. Nine original buildings from the fort's military period remain, and many available artifacts aid in telling its story. Most of the rooms have been refurnished using museum-quality objects and reproductions. The visitor is able to visualize the site as it was over a century ago.

As in the other alternatives, this no-action alternative would expand the Santa Fe Trail cultural theme. Management strategies already in place would accommodate this program expansion and no new policies would be instituted.

## **VISITOR USE**

### **Access, Circulation, and Parking**

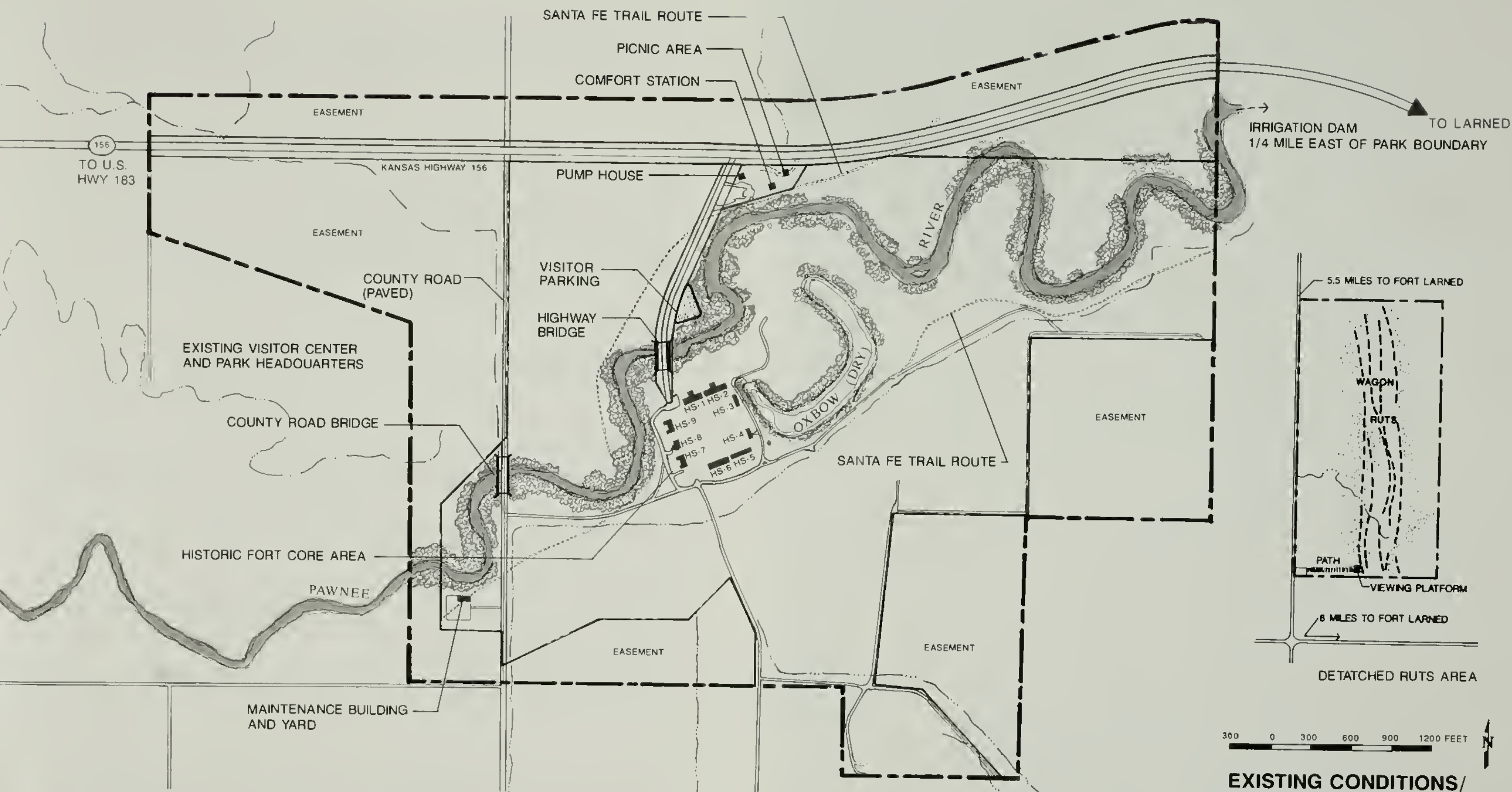
There would be no change or improvement in vehicle or pedestrian traffic flow. Visitors would continue to enter the historic core area from the existing parking lot by walking across the bridge over the Pawnee River into the fort area. Parking for visitors with disabilities would continue to be available within the historic zone, creating a continuing visual intrusion and a negative impact on the historic scene.



## EXISTING CONDITIONS/ ALTERNATIVE 1: NO ACTION

**FORT LARNED NATIONAL HISTORIC SITE**  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

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**EXISTING CONDITIONS/  
ALTERNATIVE 1:  
NO ACTION**

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DSC • 425 • 20,001C • DEC 93

## **Information and Orientation**

Due to the park's distance from Larned, the local community and service center, information about commercial visitor services and orientation to the region is essential. This information would continue to be provided in the visitor center lobby and augmented as necessary through staff contact. Information about the historic site and orientation to its resources would be presented as part of the overall interpretive program.

## **Interpretation and Visitor Experience**

The interpretation of the fort and the Army lifestyle of the historic period (1868-1878) would continue. Interpretation of the Santa Fe Trail travel and commerce theme would continue to be inadequate, as would interpretation of the Plains Indian culture and lifestyle theme. The visitor experience would continue to be shaped by the existing visitor center, self-guided tour, and self-guided history walk. The current experience is affected by the walking distance from parking lot to the visitor center and the presence of modern intrusions on the historic scene.

Park visitors would continue to enjoy the existing interpretive and visitor services:

- a visitor center, located in barracks HS-1, containing an information/orientation/fee collection desk where personal interpretive services for the park are available to visitors; museum exhibits (weighted heavily toward interpretation of the military fort story and conflict with American Indians); a 10-minute slide program; a Southwest Parks and Monuments Association (SPMA) publications sales outlet; and restrooms

- a self-guided walking tour of the fort's historic core area using the park's unigrid folder, with the opportunity to enter six of the eight other surviving historic structures (all of which are partially or totally refurnished) and the reconstructed blockhouse

- a 1-mile self-guided history walk (using a brochure available at the visitor center desk) through the historic oxbow area, the east and south perimeters of the fort (interpreting the sites of historic buildings and facilities), and the areas of reintroduced native prairie grasses

- as paid and volunteer staff allows, a variety of fixed station interpretation (usually as living history), conducted tours (sometimes as costumed interpretation), interpretive programs and demonstrations (sometimes as costumed interpretation), and interpretive and visitor services by roving interpreters

- limited wayside exhibit interpretation in both the historic core area and in the detached 44-acre segment that contains historic Santa Fe Trail ruts and native prairie grasslands.

## **Visitor Services**

Visitor services and interpretive support facilities located in barracks HS-1 include public restrooms, a pay phone, a public tornado shelter, interpretive staff offices, storage space for park brochures and SPMA sales stock, and a staging area/educational room for the many

## ALTERNATIVES

school classes and organized groups that visit the park annually. Museum collections, management, and storage would remain in the new commissary building HS-4.

### **Recreational Activities**

Recreational activities at the park are now limited to the existing picnic area.

### **Visitor Capacity**

Current visitation levels have had no documented adverse effect on cultural and natural resources. To be prepared to recognize and mitigate adverse visitor impacts, resources must be monitored and data on resource conditions recorded. Baseline data on resource conditions and visitor experiences must be documented. Changes that should be monitored might include visitation increases, decline in staff contacts with individual visitors, increased demand for special events and living history programs, deterioration of historic artifacts, appearance of social trails, and changes in vegetation or wildlife species composition.

If significant changes in these indicators become apparent, a new NPS visitor experience and resource protection program should be initiated. This program would analyze effects on visitor experiences and resources, formalize a monitoring strategy, and identify actions to manage visitor capacity.

### **Visitor Facilities to Be Retained or Expanded**

No visitor facilities are to be expanded.

### **Visitor Facilities to Be Removed or Restricted**

No visitor facilities are to be removed or restricted.

## **PARK OPERATIONS**

There would be no change in park operations as a result of implementing this alternative. The new Santa Fe Trail interpretive theme will be expanded regardless of the alternative selected. It will require no additional staff positions other than those identified in the 1978 master plan.

## **GENERAL DEVELOPMENT**

No additional physical development would be accomplished as a result of implementing this alternative.

## **BOUNDARY ADJUSTMENTS AND LAND PROTECTION**

No modifications to park boundaries are proposed or necessary, nor are any additional land protection measures proposed.

## **PLAN IMPLEMENTATION**

No specific actions, other than approval by the regional director and the Washington Office, are necessary to implement this alternative. The present management policies would continue. The existing master plan would continue in force and will require additional staff and development.

## **ALTERNATIVE TWO: MODERN USES OF EXISTING HISTORIC STRUCTURES**

### **GENERAL**

Under this alternative there would be no major construction except for the expansion of the maintenance building and the construction of a maintenance storage facility. Existing administrative and visitor services would be separated and the administrative functions relocated to another historic structure. Park management and administrative offices, as well as the park library and reference collections, would be moved from barracks HS-1 to other historic structures. None of the modern intrusions would be removed from the historic core area.

### **LAND USE AND MANAGEMENT**

#### **Existing Land Use**

The surrounding land use pattern in this alternative would be the same as in alternative one.

#### **Management Zoning**

The land use pattern within the park would not change, and there would be no modifications to the existing management zoning.

### **RESOURCES MANAGEMENT**

The National Park Service would continue to preserve and protect the cultural and natural resources of the park. Cultural resources would continue to be emphasized in accordance with applicable laws, regulations, and policies.

#### **Natural Resources**

The area surrounding Fort Larned enhances the visitor experience. The natural and cultural resources are intertwined in the stories of military life, Santa Fe Trail trade, and the Plains Indians. The purchase of visual easements and revegetation with native prairie plant species has allowed for the protection of much of the historic scene. Uncultivated prairie grassland exists in the Santa Fe Trail ruts area.

Woodlands are limited to the area along the Pawnee River because of dry soil conditions that predominate elsewhere. Portions of the riverbank have been diked to restrict flooding. Other modifications upstream also affect the flow of the river. Small areas of wetlands have been identified adjacent the stream channel.

To the extent possible and practical vegetation disturbance would be reclaimed to original native species composition and appearance. Natural resources management would continue

under the existing resources management plan (1988) and the prairie management plan (1986), pending preparation of a cultural landscape report.

## **Cultural Resources**

Cultural resource management at Fort Larned focuses on the protection, restoration, and maintenance of the historic resources. Education and visitor experience are central to the mission of the national historic site. The fort preserves an important aspect of American history and allows a look at the lives of frontier soldiers, traders, travelers, and Plains Indians. Nine of the original buildings from the fort's historic period are intact, and many artifacts are still available to aid in telling its story. Most rooms have been refurnished with museum-quality objects and reproductions. In this alternative no modern intrusions would be removed from the core area. Modern uses of historic structures would continue and be expanded. Existing management strategies would accommodate this program expansion and no new policies would be instituted.

## **VISITOR USE**

### **Access, Circulation, and Parking**

Access, circulation, and parking would be the same as in alternative one. Visitors would continue to enter the historic core area from the existing parking lot by walking across the bridge over the Pawnee Fork into the fort area. Parking for visitors with disabilities would continue to be available within the historic zone, creating a visual intrusion and a negative impact on the historic scene.

### **Information and Orientation**

Information and orientation would be the same as in alternative one.

### **Interpretation and Visitor Experience**

The visitor experience would be similar to that described in alternative one, except that the interpretive program would be expanded and the visitor center in barracks HS-1 enlarged.

The expanded interpretive themes would be:

- the road to Santa Fe or the Santa Fe Trail, increased trade, travel, and commerce

- through the establishment of Fort Larned and other associated military posts, the U.S. government established its authority and control and extended its influence along the Santa Fe Trail corridor

- the culture and the lifestyle of the Plains Indians was irreversibly altered by encroaching nonnative cultures

people from a variety of cultures interacted at Fort Larned, including Anglo-Americans, African-Americans, Mexican-Americans, and American Indians

Visitors to Fort Larned National Historic Site would have the opportunity to gain an understanding of the interrelationships among Fort Larned, the Santa Fe Trail, the native inhabitants of the region, the environment in which those interactions took place, and the historic integrity and authenticity of the park's surviving historic resources.

The relocation of the headquarters and administration functions to another historic structure would free space for expansion of the interpretive program in barracks HS-1. Park management and administrative offices and their related facilities now in this barracks would be moved to HS-9, the north company officers' quarters. Included in the functions shifted to HS-9 would be several interpretation support functions, including the park library and related collections storage and some interpretive staff offices and work space. A living history support complex for clothing and equipment storage, changing rooms, lockers, and showers would be provided in barracks HS-1. The museum exhibit area in the barracks would be enlarged and redesigned into three specific galleries, each featuring one of the park's three primary interpretive themes. The existing audiovisual program would be expanded to include all the site's primary interpretive themes. State-of-the-art audiovisual equipment would be used. A new audio track would be installed to present period music between audiovisual program showings. The lobby, including the information/orientation desk and the Southwest Parks and Monuments Association (SPMA) sales facility, would be redesigned.

The eight historic structures now open to visitors would remain open. Additionally, the historic furnishings exhibit would be completed in barracks HS-2, the enlisted men's barracks/post hospital. A recording would be developed for each major refurnished room or area, featuring a combination of appropriate ambient sounds and typical conversation with little or no narration.

Modern intrusions would be removed from the commanding officer's quarters (HS-8), the structure restored and refurnished to its historic period appearance, and opened for interpretation and visitor use.

### **Recreational Activities**

Recreational activities at the park are now limited to the existing picnic area. No other recreational uses are proposed.

### **Visitor Services**

Visitor services would be similar to alternative one, except that orientation to the park and its features would be accomplished through directional signs and a system of waysides. It would include an introductory and four to six interpretive wayside exhibits along the 1-mile self-guided trail in order to interpret the fort's missing features. A pair of wayside exhibits at the detached Santa Fe Trail ruts area would interpret the trail. An orientation sign at the picnic area, possibly with either an audio station or a transmitter for the park's traveler information station broadcasts, would also be built.

All commercial visitor services are currently available at nearby Larned. Vending machines might be installed for visitor convenience.

### **Visitor Capacity**

Visitor capacity would be the same as in alternative one.

### **Visitor Facilities to be Retained or Expanded**

Visitor facilities would remain unchanged.

### **Visitor Facilities to be Removed or Restricted**

No existing visitor facilities are to be removed or restricted.

## **PARK OPERATIONS**

All administrative and operational functions are proposed to be retained in the historic core area, but separated from the visitor/interpretive activities. The existing general management plan provides for staff housing in the commanding officer's quarters, but this amendment would, instead, open the building for interpretation. The interpretive importance of the commanding officer's quarters outweighs the advantages of using the structure for staff housing, which include the protection provided by staff living onsite.

Regardless of the development options pursued, the interpretive program would be expanded by the addition of the Santa Fe Trail and American Indian themes. This would require four additional full-time equivalent (FTE) staff positions. Two of the four permanent positions would be needed to operate facilities and give onsite and offsite talks about the Santa Fe Trail. One permanent maintenance position would be needed to clean and maintain facilities. One position would be shared between maintenance and interpretation during the May through September peak visitation period.

## **GENERAL DEVELOPMENT**

All headquarters and visitor facilities would be housed within the existing historic structures. Maintenance facilities would be expanded to increase storage and would allow the restoration of the historic structures now devoted to storage. The water treatment and distribution system(s) would be upgraded to improve water quality and service. Overhead utilities within the park boundaries would be buried. A new entrance sign would be installed, and new signs would direct visitors to the ruins site. Trail markers would also be installed.

## **Visitor Center**

The visitor center would remain in barracks HS-1. Administrative/headquarters functions would be removed from the barracks and relocated to officer's quarters HS-9. Barracks HS-1 would house the auditorium, museum/exhibit space, group staging/education area, sales and sales storage area, interpretive media and storage area, public restrooms, interpreter's work area, living history support facilities, and storm (tornado) shelter.

With the expansion of available floor space in the visitor center, a redesign of the floor plan would be necessary to achieve greatest efficiency. Interpretive facilities would consist essentially of those now in place, but would be modified to accommodate the added themes. The auditorium would remain the same size as it is now (seating 60 people in 800 square feet), but the audiovisual program would expand in length and coverage of interpretive themes. Exhibit space would be expanded (to 3,000 square feet) into the areas vacated by the administrative/headquarters functions to accommodate the four primary interpretive themes and their associated displays and interpretive media. Each theme would have its own area to present its message to the visitor. The group staging/education area, interpreter's work area, sales/sales storage area, and the media/storage area would be incorporated into the floor plan. The restrooms and storm shelter would remain in their present locations.

## **Administration and Headquarters**

All administration and headquarters functions in barracks HS-1 would be relocated to officers' quarters HS-9. This building would not be open to the public and not restored or refurnished to the historic period. The public would not have an opportunity to experience the historic structure with the highest degree of integrity of all the site's buildings. It would require rehabilitation before it could be used for administrative functions. Office space would require about 3,033 square feet of the 3,650 square feet available in officer's quarters HS-9. Several interpretive support facilities, such as the park library and related collections storage (manuscripts, slides), and some interpretive staff offices and work space, would also be housed in this building.

## **Maintenance**

A 750-square-foot addition to the existing maintenance building would be required to provide a heated paint storage room and heated space for vehicle storage. Work space in the maintenance building would be increased by relocating materials to a new facility.

A separate 1,200-square-foot structure would be needed for enclosed materials and equipment storage. It would be weather-tight, concrete-floored, and securable, but it would not need to be heated or have water service. This building would provide storage for materials and equipment now kept outside.

## **Vehicle Access, Circulation, and Parking**

Vehicle access, circulation, and parking would remain unchanged.

## **Pedestrian Circulation**

Pedestrian circulation would remain unchanged.

## **Building Restoration**

Building restoration would be the same as in alternative one.

## **Utilities**

Utility improvements include upgrading and consolidating the existing water systems into one looped system and the burial of overhead utility lines within the park boundaries.

The quality of the water supplied by wells at Fort Larned is generally poor. The ground water contains excess manganese and requires filtration and chlorination. There are three separate water systems now in use — one in the historic core, one at maintenance, and one at the picnic area. Each system is fed by its own well and has its own treatment facility (filter and chlorinator). All three systems require frequent maintenance to clean mineral deposits from the filters and adjust the chlorinators. The single well and treatment system at the old commissary HS-5 in the historic core has adequate supply and treatment capacity to meet the demands of the three areas. It would be more efficient to consolidate the three systems into one and cut the labor and maintenance requirements by two-thirds. The chlorinators at each treatment site work better if there are adequate demand flows. In general the historic core system has greater demand than the maintenance building and picnic area.

The treatment plants at the maintenance and picnic area wells would be disconnected or removed. The historic core water treatment facility would be upgraded by the addition of a new filtration system, and its distribution system expanded to serve all three areas. The new water distribution system would be "looped" (a closed circular piping circuit) to maintain constant pressure and volume to all points of delivery and provide maximum flexibility for maintenance and repairs. The two other wells could be maintained without their treatment facilities as backup supplies. They could also be used for purposes that do not require potable water, such as reserve fire supply, equipment washing, and irrigation.

## **Site Work**

Site work consists of a new entrance sign, highway signs, trail markers, and interpretive waysides.

Existing trails would be maintained to give visitors the opportunity to experience the history, resources, wildlife, and vegetation of the area. The trails would also provide a recreational

experience and reinforce the interpretive program by bringing the visitor into contact with the setting and resources of the fort. Trail markers would delineate the trail route. Waysides would provide interpretive messages about each area.

A new entrance sign would be installed where the entrance road intersects with Kansas 156. Highway directional signs would be installed on Kansas 156 and along the county roads west of the fort to guide visitors to the detached Santa Fe Trail ruts site. The directional signs would be carefully sited, clear, and visible, and would indicate both the direction and the distance to the ruts site.

## Accessibility

Laws, regulations, and National Park Service policies require that all programs, services, structures, and sites be made accessible to the highest degree possible and feasible to visitors and employees who are disabled. Design standards of the Architectural Barriers Act of 1968, as amended (41 CFR 101-19.6), would be followed in all new development. These are described in *Uniform Federal Accessibility Standards* (UFAS). Comments of the Advisory Council on Historic Preservation shall be obtained when they are required by section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), prior to modifying to historic structures.

A section of National Park Service *Management Policies* (chapter 5, page 14) states:

Modifications to historic structures would be made to provide the highest feasible level of physical access to historic properties for disabled persons.

The modifications must be consistent with the preservation of the properties' significant historical attributes.

Modifications for access would be designed and installed to least affect the features of a property that contribute to its significance.

Some impairment of some features would be accepted in providing access.

If access modifications to particular features would destroy a property's significance, such modifications would not be made.

To ensure accessibility to the structures at Fort Larned, wooden ramps, earth ramps, and wheelchair lifts would be installed. These features would be added in the least obtrusive manner possible, according to the provisions outlined above. If the impacts of the accessibility structures were deemed detrimental to a historic structure, information on the resource would be made available at the visitor center through the use of a videotaped program. The parking lot would be relocated with the new visitor center and would be adjacent to it. Both the parking and visitor center would be located west of the historic core area to reduce the distance to the historic structures and resources.

## **Modern Uses Of Historic Structures**

Any rehabilitation of historic structures for nonhistoric purposes would be accomplished in accordance with NPS-28, *Cultural Resources Management* and NPS *Management Policies*.

NPS-28 defines "rehabilitation" as a treatment that improves the utility or function of a structure and often involves life safety and other code improvements. It also recommends that the use of rehabilitation be limited to structures that are being adaptively used and that do not play a primary role in a park's interpretive program. It requires that any alterations to the structure not destroy significant aspects or materials of the structure and that the alterations be done in a manner that ensures that the form and integrity of the structure would be unimpaired if the alterations were removed in the future.

NPS *Management Policies* states (chapter 5, page 6) that a structure may be rehabilitated for a contemporary functional use if two conditions are met. First, the structure cannot adequately serve an appropriate use in its present condition. Second, the rehabilitation of the structure would not alter the integrity or character of the building or conflict with park management objectives. In the case of officers' quarters HS-9, the structure retains the highest degree of historic integrity of all park buildings but has not been restored or furnished to the historic period nor has it been opened to the public. The structure is basically sound and capable of serving a modern use; however, the interior appearance of the building would be affected by the installation of heating ducts, light switch plates, plumbing, security fixtures, and other essential equipment. HS-9 is one of two identical officers' quarters at the fort. The other, officer's quarters HS-7, has been restored and refurnished to the historic period and is open to public view.

## **BOUNDARY ADJUSTMENTS AND LAND PROTECTION**

No additions or deletions of land would be required to implement this alternative.

## **PLAN IMPLEMENTATION**

### **Legislative Actions Required to Permit the Action to Occur**

No legislative action would be required to implement this alternative, other than the appropriation of funds for the design and construction of facilities and any increase in operations funding. Prior to any design and construction activity, the development sites must be surveyed and documented to mitigate impacts to cultural resources.

### **Additional Studies Required**

This alternative would require updates of the historic furnishings report and the historic structures report as well as a cultural landscape report and an archeological survey. These updates, reports, and surveys should be accomplished prior to design and construction to ensure that all compliance regulations have been fulfilled. The cost of the updates would be

about \$35,000 for each building studied. The cultural landscape report would cost about \$65,000. The archeological survey would cost approximately \$84,000.

## Phasing

There would be no recognized benefit from phased implementation of this alternative.

## Operating Costs

Since the interpretive mission would be expanded from one to three major themes, there would be a need for increased staff. The staff increase (4 FTEs) would require additional base funding for the park. This cost is estimated at \$135,000 per year (in 1993 dollars), including salary, benefits, and support costs.

TABLE 1: ALTERNATIVE TWO — DEVELOPMENT COST ESTIMATE

| Item Description                                                                        | Quantity & Unit | Gross Construction Costs | Advance and Project Planning Costs | Total Project Costs |
|-----------------------------------------------------------------------------------------|-----------------|--------------------------|------------------------------------|---------------------|
| <b>Studies Required*</b>                                                                |                 |                          |                                    |                     |
| Historic furnishings report updates<br>commanding officer's quarters HS-8               | 1s              |                          |                                    | \$35,000            |
| Historic structure report updates<br>commanding officer's quarters HS-8 - interior only | 1s              |                          |                                    | \$35,000            |
| officer's quarters HS-9 - interior only                                                 | 1s              |                          |                                    | \$35,000            |
| Cultural landscape report                                                               | 1s              |                          |                                    | \$65,000            |
| Archeological survey/investigations                                                     | 6 ac.           |                          |                                    | \$84,000            |
| <b>Structural Development</b>                                                           |                 |                          |                                    |                     |
| Remodel and expand visitor center in barracks HS-1                                      | 7,691 sf        | \$403,000                | \$76,900                           | \$479,900           |
| Visitor center furnishings                                                              | 1s              | \$60,500                 | \$11,500                           | \$72,000            |
| Interpretation                                                                          |                 |                          |                                    |                     |
| museum exhibits                                                                         | 1s              | \$859,000                | \$163,900                          | \$1,022,900         |
| audiovisual                                                                             | 1s              | 292,000                  | 55,700                             | 347,700             |
| waysides                                                                                | 12 each         | 85,000                   | 16,200                             | 101,200             |
| historic furnishings                                                                    | 1s              | 410,000                  | 78,200                             | 488,200             |
| Relocate administration to officer's quarters HS-9                                      | 3,033 sf        | \$238,400                | \$45,500                           | \$283,900           |
| Possible solutions to accessibility concerns*                                           |                 |                          |                                    |                     |
| earth ramp to barracks HS-1                                                             | 1s              | \$700                    | \$100                              | \$800               |
| earth ramp to barracks HS-2                                                             | 1s              | \$700                    | 100                                | 800                 |
| boardwalk connection from barracks HS-1 to HS-2                                         | 250 sf          | \$3,900                  | 700                                | 4,600               |
| earth ramp to shops building HS-3                                                       | 1s              | \$700                    | 100                                | 800                 |
| wheel chair lift to new commissary HS-4                                                 | 1s              | \$9,800                  | 1,900                              | 11,700              |
| earth ramp to old commissary HS-5                                                       | 1s              | \$700                    | 100                                | 800                 |
| earth ramp to quartermaster storehouse HS-6                                             | 1s              | \$700                    | 100                                | 800                 |
| wheel chair lift to officer's quarters HS-7                                             | 1s              | \$9,800                  | 1,900                              | 11,700              |
| wheel chair lift to commanding officer's quarters HS-8                                  | 1s              | \$9,800                  | 1,900                              | 11,700              |
| wheel chair lift to officer's quarters HS-9                                             | 1s              | \$9,800                  | 1,900                              | 11,700              |
| Security system for historic buildings                                                  | 46,100 sf       | \$181,200                | \$34,600                           | \$215,800           |
| Maintenance building addition                                                           | 750 sf          | \$117,900                | \$22,500                           | \$140,400           |

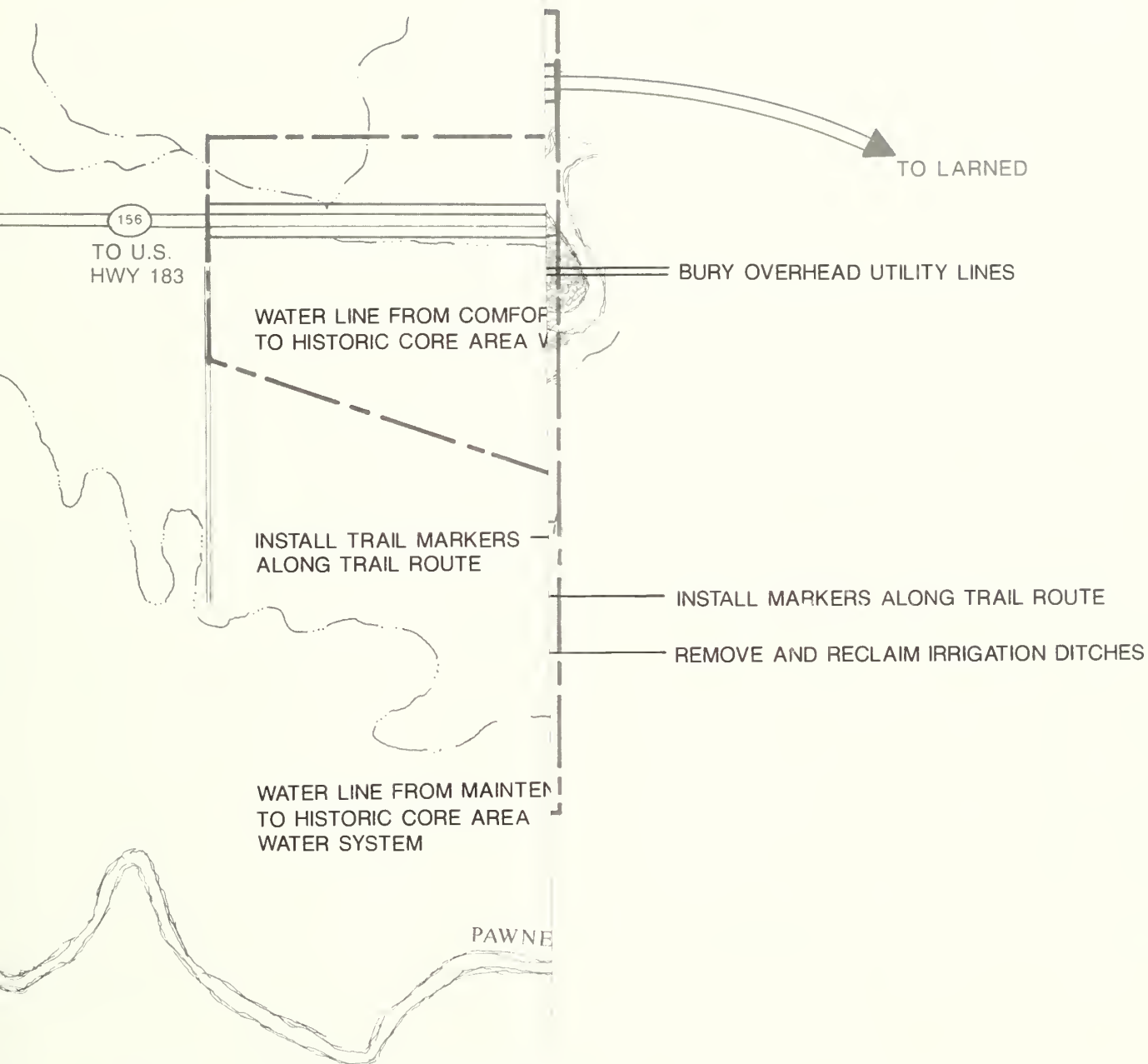
*Alternative Two: Modern Uses of Existing Historic Structures*

| Item Description                          | Quantity<br>& Unit | Gross<br>Construction<br>Costs | Advance and<br>Project Planning<br>Costs | Total<br>Project<br>Costs |
|-------------------------------------------|--------------------|--------------------------------|------------------------------------------|---------------------------|
| New maintenance storage building          | 1,200 sf           | \$94,300                       | \$18,000                                 | \$112,300                 |
| Covered parking structure for 3 cars      | 720 sf             | \$28,300                       | \$5,400                                  | \$33,700                  |
| <b>Site Development</b>                   |                    |                                |                                          |                           |
| Install signs:                            |                    |                                |                                          |                           |
| new entrance sign                         |                    |                                |                                          |                           |
| large                                     | 1 each             | \$13,100                       | \$2,500                                  | \$15,600                  |
| small                                     | 2 each             | \$13,100                       | 2,500                                    | 15,600                    |
| directional signs to ruts site            | 5 each             | \$1,600                        | 300                                      | 1,900                     |
| trail markers                             | 10 each            | \$3,300                        | 600                                      | 3,900                     |
| <b>Utilities</b>                          |                    |                                |                                          |                           |
| New water filtration system               | ls                 | \$366,800                      | \$70,000                                 | \$436,800                 |
| New water distribution lines              | 6,200 lf           | \$243,700                      | \$46,500                                 | \$290,200                 |
| Bury on-site overhead utility lines       | 7,200 lf           | \$198,100                      | \$37,800                                 | \$235,900                 |
| <b>Removals</b>                           |                    |                                |                                          |                           |
| Obliterate and reclaim irrigation ditches | 15,600cy           | \$143,000                      | \$27,300                                 | \$170,400                 |
| <b>TOTAL DEVELOPMENT COST</b>             |                    | <b>\$3,799,000</b>             | <b>\$724,700</b>                         | <b>\$4,777,700</b>        |

sf = square feet, lf = linear feet, ls = lump sum, ac = acre

\* The studies required prior to design and construction activity do not require the addition of any advance and project planning funding; therefore no such funds have been included in the project cost totals.





EXPAND MAINTENANCE BUILDING  
MATERIAL STORAGE,  
AND VEHICLE STORAGE

INSTALL DIRECTIONAL SIGNS  
TO RUTS AREA

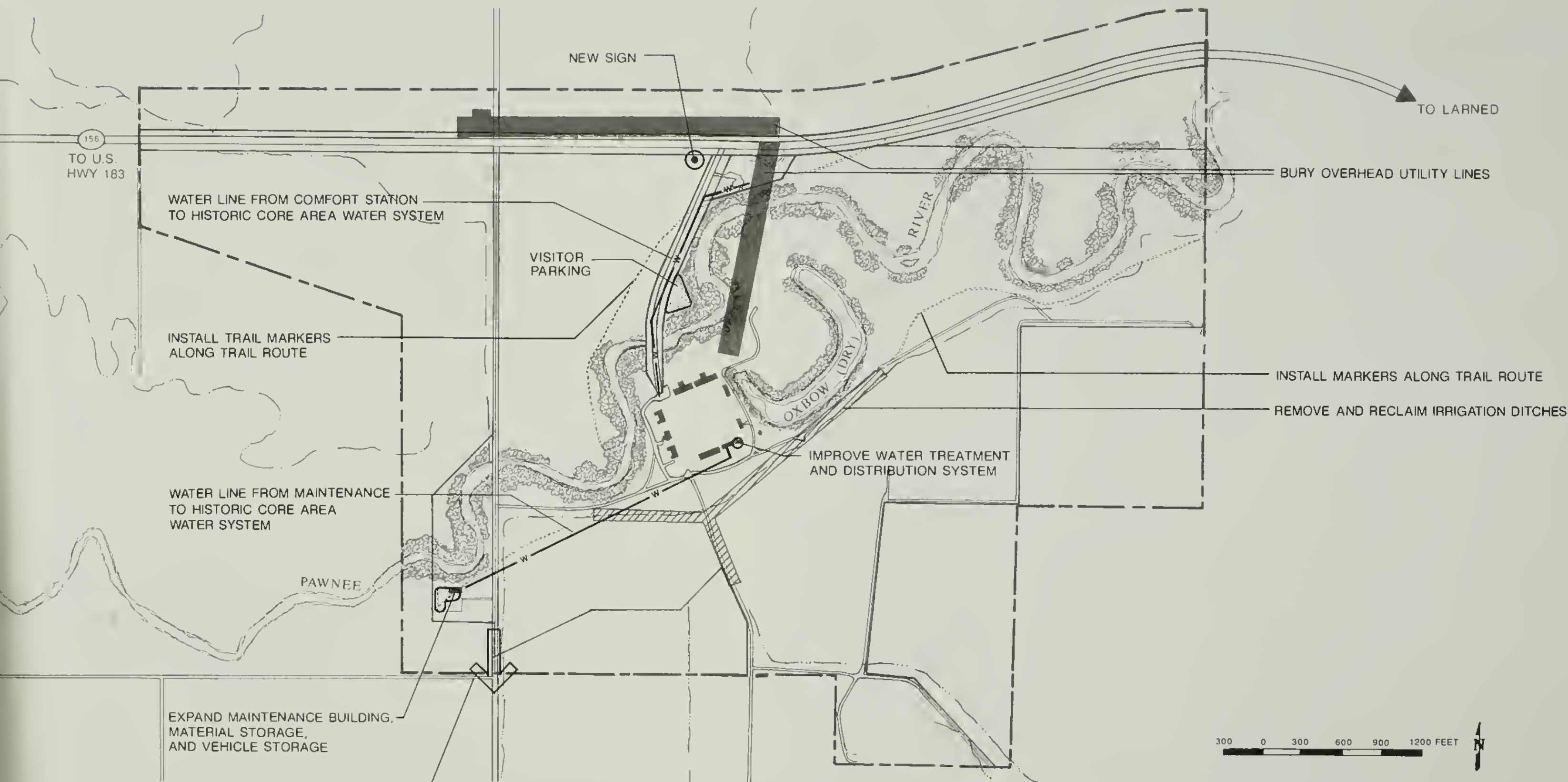
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## ALTERNATIVE 2: MODERN USE OF HISTORIC STRUCTURES

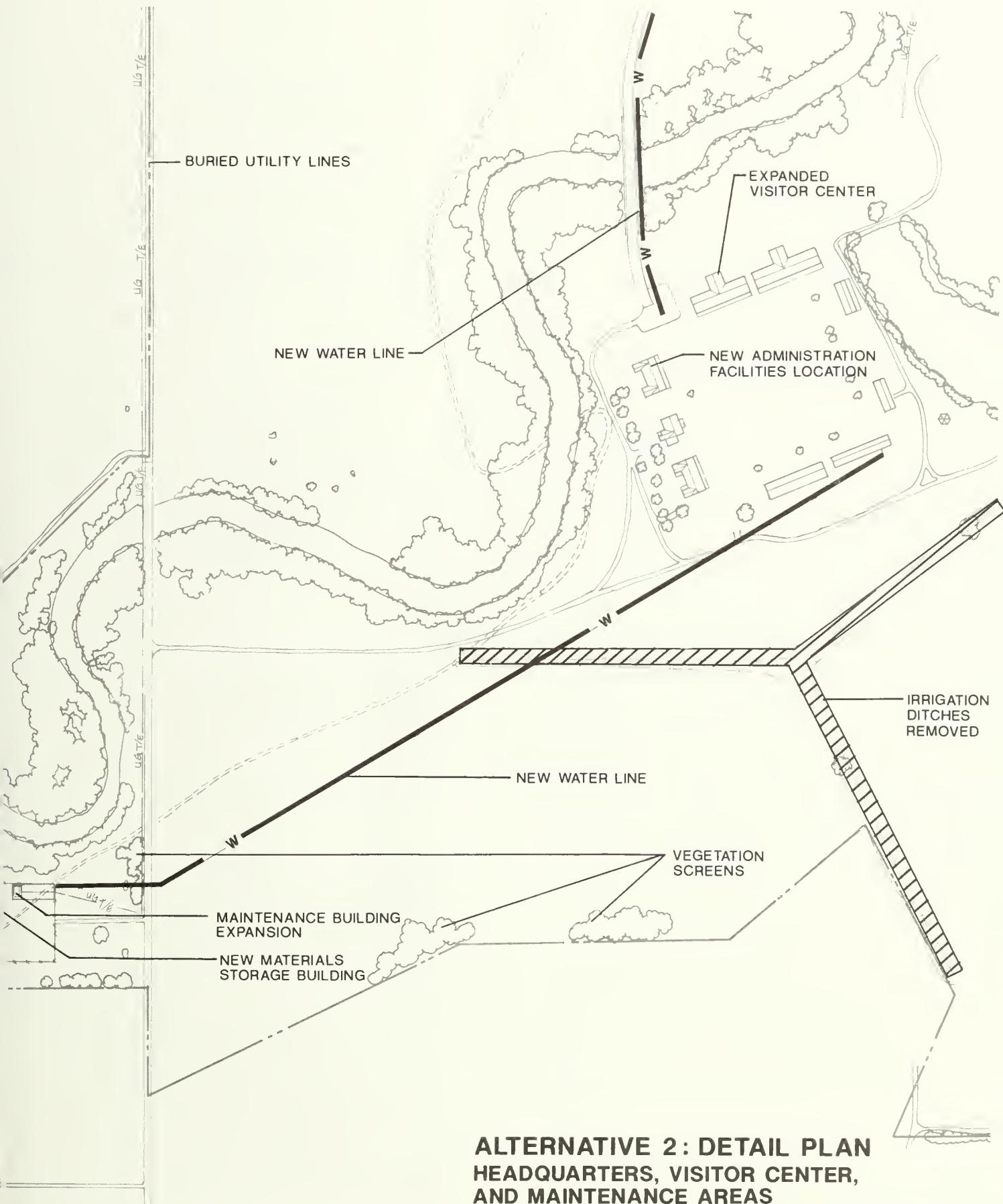
**FORT LARNED NATIONAL HISTORIC SITE**  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

DSC • 425 • 20.006C • DEC 93



**ALTERNATIVE 2:  
MODERN USE OF HISTORIC STRUCTURES**

**FORT LARNED NATIONAL HISTORIC SITE**  
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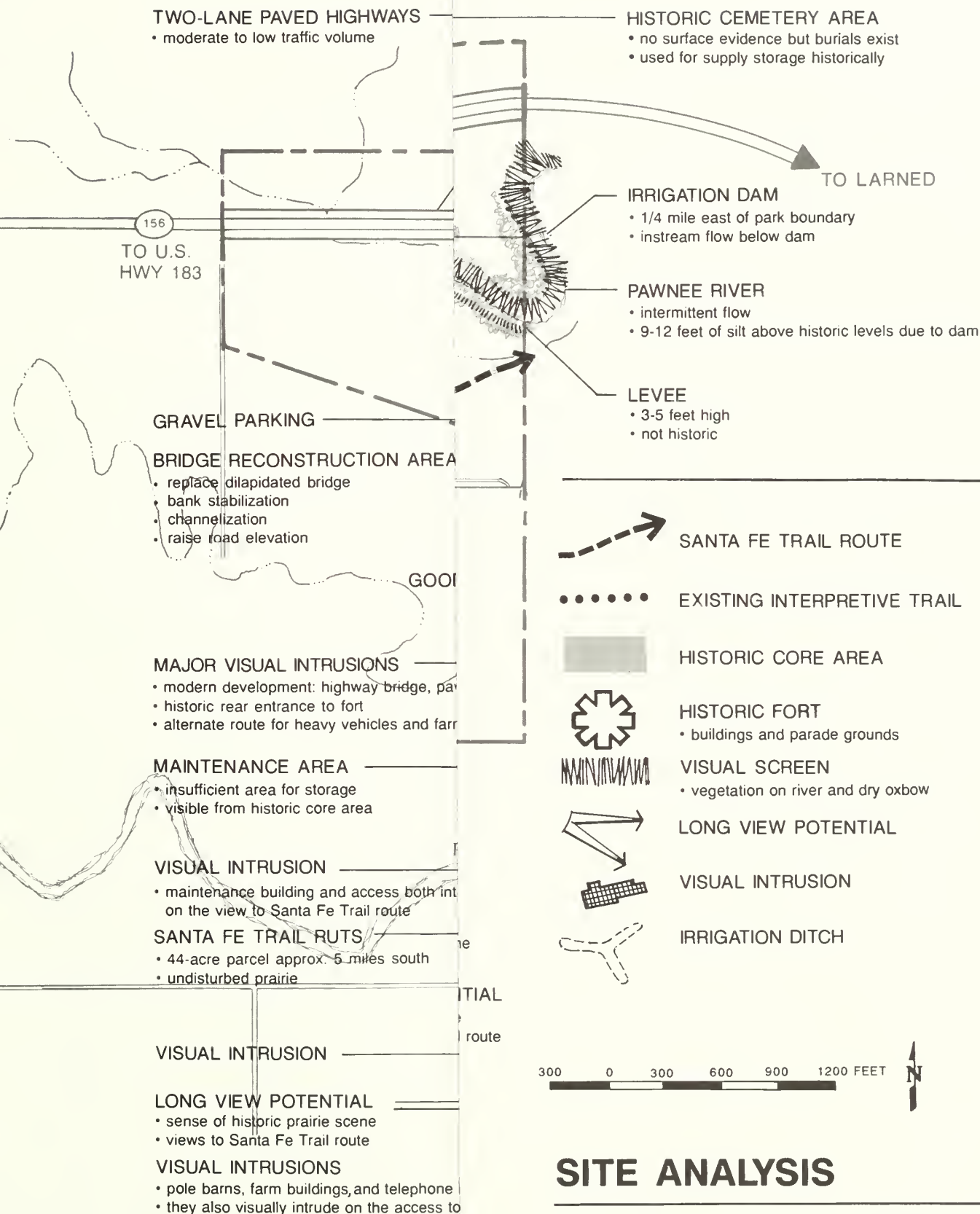
## ALTERNATIVE 2: DETAIL PLAN HEADQUARTERS, VISITOR CENTER, AND MAINTENANCE AREAS

### FORT LARNED NATIONAL HISTORIC SITE

UNITED STATES DEPARTMENT OF THE INTERIOR  
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## SITE ANALYSIS

**FORT LARNED NATIONAL HISTORIC SITE**  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

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## **ALTERNATIVE THREE: RESTORE EXISTING HISTORIC STRUCTURES**

### **GENERAL**

All historic structures and the historic core area would be restored to the historic period (1868-1878) appearance. Visitor center, administrative, operational, and curatorial functions would be relocated outside the historic core area to a new visitor center/administrative building. Onsite modern intrusions on the historic scene, such as vehicle traffic, the highway bridge, irrigation ditches, and the handicapped parking lot would be removed if possible, or visually screened. Offsite visual intrusions, such as overhead power lines and farm structures, would be mitigated through vegetative screening. Existing uses necessary for the operation of the site but not open or visible to the visitor would be retained within the core, including buried utilities, storm shelters, restrooms, and the water purification system.

### **LAND USE AND MANAGEMENT**

#### **Existing Land Use**

The surrounding land use pattern would be the same as in alternative one.

#### **Management Zoning**

Existing management zoning categories at Fort Larned would include cultural (historic), park development, and special use zones. Those categories would remain, but their acreages and distributions across the site would be modified as necessary to implement this alternative.

The cultural zone remains unchanged from the 1978 master plan. The entire historic site is in this zone, including the Santa Fe Trail ruts area, the fort proper, the surrounding prairie and riparian lands owned by the park, and those lands held in easement by the park. As they are currently developed and used, most of the utility easements within this zone do not intrude on the historic scene. Overhead utilities within the rights-of-way of adjacent roads and highways do interfere with the views to and from the fort.

The park development zone is composed of five subzones in three separate development areas: the administrative development subzone; the educational/interpretive development subzone; the recreational subzone; the access/circulation subzone; and the landscape management subzone. The administrative development subzone includes the maintenance area and contemplated improvements west of the county road and the new headquarters facilities proposed for the area west of the officers' housing and the Pawnee River. The educational/interpretive development subzone includes the new visitor center. The recreational subzone includes the picnic area adjacent to Kansas Highway 156 and the new picnic area south of the visitor center. The access/circulation subzone includes the visitor center, the entrance road and parking lot, and the pedestrian bridge west of the officer's housing and the Pawnee River. The landscape management subzone extends for 150 feet on either side of the centerline of the Pawnee River channel within the boundaries of the park. The cultural landscape report will determine how the landscape in this subzone will be managed to maintain a vegetation screen and visual buffer between the historic areas south of the river channel and the modern developments and visual intrusions to the north and west.



The special use zone includes all the lands within the park boundaries that are not federally owned and/or that are held in easement. This includes all visual easements, the highway rights-of-way for Kansas Highway 156 and the county road, and interstate gas line easements.

## **RESOURCES MANAGEMENT**

The National Park Service would continue to preserve and protect the cultural and natural resources of the park and emphasize cultural resources in accordance with the purpose of the legislation that created the park. The National Park Service would manage these resources consistently with applicable laws, regulations, and policies.

### **Natural Resources**

Restoration and management of the prairie will be accomplished in accordance with the new prairie management plan (1993), and natural resources will be managed under the existing resources management plan (1988), pending preparation of the cultural landscape report. The surrounding agricultural lands contribute to the overall scene.

### **Cultural Resources**

Cultural resource management at Fort Larned would focus on the protection, restoration, and maintenance of the historic resources. The cultural landscape report will determine the management of the site's landscape, especially the use of vegetation to screen modern intrusions.

## **VISITOR USE**

### **Access, Circulation, and Parking**

Park access would be from the existing county road. A new entrance road would extend from the county road to a new visitor parking lot abutting the new visitor center/headquarters building. A pedestrian bridge would span the Pawnee River channel as part of a path connecting the visitor center to the historic core area. The path would enter the historic core area from the southwest and connect to the parade ground between the south company officers' quarters HS-7 and the quartermasters storehouse HS-6. The existing entrance road, parking lot, fee collection station, highway bridge, handicapped parking area, nonhistoric dirt roads, and asphalt trails south of the Pawnee River would be obliterated. The existing dirt road leading from the historic core area to the county road would be stabilized for use by fire apparatus and other vehicles during wet weather.

## **Interpretation and Visitor Experience**

Interpretation and visitor experience would be as in alternative two.

## **Recreational and Cultural Activities**

Recreation at the park is now limited to the existing picnic area, which would be retained. Several picnic tables would be placed near the new visitor center. No other recreational uses are proposed, although there might be more living history demonstrations within the historic core.

## **Visitor Services**

Visitor services and interpretive support facilities would be provided mainly in a new visitor center/administration building west of the historic core area. Some facilities, including interpretive work space, restrooms, and storm shelters, would also be provided within the historic core area. The restored mess hall in the west end of barracks HS-1 would be used as a staging area for school groups. Food, lodging, and other necessities are available at nearby Larned and would not be provided at the park.

Services at the visitor center would include information and orientation, sales, museum, theater, vending machines, restrooms, and life-safety facilities.

Interpretive support facilities housed in the new visitor center would include interpretive staff offices and work space, staff library, manuscript and photo files, museum collections storage and management facilities, interpretive supplies storage, and sales storage.

Administrative functions would be housed in the new visitor center/administrative building, including the staff conference room, restrooms, and break room. Visitor safety and resource protection would be coordinated from this building.

Orientation to the park and its features would be as described in alternative two.

## **Visitor Capacity**

Visitor capacity would be as in alternative one.

## **Visitor Facilities to be Retained or Expanded**

The existing picnic area would be retained. An additional picnic area would be developed near the proposed visitor center.

## **Visitor Facilities to be Removed or Restricted**

Existing visitor center and administrative uses and facilities would be removed from the historic core and placed in the new visitor center/administration building. The existing entrance road, highway bridge, fee collection station, visitor parking lot, core area handicapped parking lot, and any nonhistoric core area roads would be removed. The new entrance road and parking lot (including handicapped spaces) would be located with the new visitor center/administration building.

## **PARK OPERATIONS**

All administrative and operational functions would be relocated outside of the historic core area. The existing general management plan provides for housing in commanding officer's quarters HS-8. This amendment would discontinue that provision and open the building for interpretation.

The interpretive program would expand the Santa Fe Trail and the Plains Indian themes. This expanded interpretive mission would require five additional FTEs — two permanent interpretive positions to operate facilities and give presentations, one permanent maintenance position to maintain facilities, and two FTEs shared between maintenance and interpretation during the May through September peak visitation period.

## **GENERAL DEVELOPMENT**

A new visitor center and administrative building would be constructed west of the Pawnee River channel and the historic core area (see appendix B). All headquarters, office, and visitor facilities now housed in historic structures would be relocated to this new building except for the interpretive staff work space and volunteer support facilities remaining in barracks HS-1. Maintenance facilities would be expanded as described in alternative two. The water treatment and distribution system(s) would be upgraded to improve water quality and service; the treatment facility would remain in its present location. The existing dirt road leading from the historic core area to the county road would be stabilized for use by fire apparatus and other vehicles during wet weather.

### **Visitor Center**

Visitor facilities would be expanded to about 6,000 square feet in a new visitor center/administration building west of the historic core. In order to accommodate larger groups, such as tours and holiday crowds, the theater would be enlarged to seat 80 people. Exhibit and museum space would be increased to 3,000 square feet and each interpretive theme would have its own area or gallery. A 760-square-foot lobby area would provide space for fee collection, sales, interpreters' work area, and visitor information and orientation. An adjacent vestibule would provide space for vending machines, seating, circulation space, a weather station, and a public phone. An adjacent exterior patio or courtyard would contain interpretive context-setting wayside exhibits. The rest of the structure would include public restrooms, book

sales storage, janitor closet and storage, miscellaneous materials storage, circulation space, and a storm shelter.

### **Administration and Headquarters**

All headquarters, office, and visitor facilities now housed in historic structures would be relocated to the new building, except for the interpretive staff work space and volunteer support facilities, which would remain in barracks HS-1. It would require about 2,800 square feet, and would include offices, mail, fax, copier, computer, radio and telephone equipment, park library, collections storage, interpretive work space, and training room. The building would also include other staff facilities such as a break room, staff restrooms, janitor's closet and storage, general storage, mechanical systems room, and circulation space.

Curatorial operations would be relocated to the basement of the visitor center/administration building. About 2,600 feet of space would be necessary to meet the security, site, and floodproofing requirements. Security considerations include exterior lighting, alarm systems, climate control, fire suppression, and storm protection (tornadoes). Site considerations would include having the physical space at the site to provide vehicle access and loading dock facilities. The site should have good visibility from the county road but should not be visible from the historic core area. Floodproofing requirements cannot be fully met at the site, so mitigation would be necessary to protect the artifacts. Flood mitigation would involve floodproofing the basement, improving drainage, raising the structure to the greatest extent possible, and all-weather access to a loading dock for emergency evacuation of artifacts in the event of a flood.

A service area adjacent to the headquarters would include a 720-square-foot carport, a trash receptacle, and a loading dock. The service area surface would be paved.

### **Maintenance**

Maintenance facilities would be as in alternative two.

### **Vehicular Access, Circulation, and Parking**

Vehicle access to the existing picnic area would remain as it is now, from Kansas Highway 156 via turn lanes. There would be no direct vehicle access between the picnic area and the visitor center, but a pedestrian trail would be provided.

Turn lanes would be added at the intersection of the county road and Kansas Highway 156 at the northwest corner of the park to improve visitor safety. Primary vehicle access to the park would be from Kansas Highway 156, then south on the all-weather county road along the west side of the park to a point just north of the Pawnee River channel. At this point, turn lanes would be constructed to allow safe turns onto a two-lane access road leading to a new parking lot. The new visitor parking lot would be adjacent to the visitor center/administrative building and would provide spaces for 50 passenger cars, including two handicapped spaces. There would also be parallel parking for four oversized vehicles and a drop zone next to the visitor

center. The turn lanes, access road, and parking lot would be paved. A security gate would be installed at the county road.

For special events the grass area west of the visitor center parking lot and south of the access road would be stabilized to overflow parking.

## **Pedestrian Circulation**

Pedestrian traffic would originate from the visitor center via hard-surfaced trails. Trails reinforce the interpretive message by bringing the visitor into contact with the setting and resources. The trails would link the various facilities, such as the visitor center, picnic area, and prairie and would be designed to preserve the visual separation of modern and historic scenes and uses.

One trail would connect the visitor center to the existing picnic area at Kansas Highway 156, following the approximate northern route of the Santa Fe Trail. The trail would provide the only access to the picnic area at Kansas Highway 156. The picnic area would accommodate large groups and individuals in a setting separated from the historic core and the visitor facilities. The separation would minimize intrusions on those who would like to enjoy the uninterrupted historic scene. From this trail, a secondary nature trail would loop into the prairie area in the northwest corner of the park where the visitor would be able to see native prairie plants in a virtually intact prairie setting.

The other trail would start at the visitor center, cross the Pawnee River channel via a new pedestrian bridge, and connect to the southwest corner of the fort quadrangle. At this point the trail would split. One branch would follow the historic road and walks of the core area. The other branch would head generally east on the Santa Fe Trail route and then would turn north around the dry oxbow to reenter the fort quadrangle at its northeast corner. This trail would present native prairie vegetation, but its main purpose would be to provide access and reinforce the visitor experience by separating the modern facilities of the visitor center from the historic resources of the core area. The vegetation along the Pawnee River would provide a physical barrier and visual screen, allowing the visitor to step back in time while crossing the bridge. The main interpretive goal of this trail would be to present the history of the fort and the Santa Fe Trail. This pedestrian link would heighten the visitor experience; the interpretive message would have more impact in a setting where the visitor would feel contemporary with 1868-1878 Fort Larned.

## **Building Restoration**

The historic buildings would be restored to their 1868-1878 appearance including the reconstruction of a wooden lean-to on the old commissary storehouse, HS-5. Existing uses necessary for the operation of the site (but not open or visible to the visitor) would be retained within the core, including utilities, storm shelters, restrooms, interpretive staff work space, volunteer support facilities, and the water purification system.

## Utilities

The water treatment system would be the same as that called for in alternative two, except that the water service in alternative three would also extend to the new visitor center/administrative building.

All overhead utility lines within the park boundaries would be removed, relocated, or buried in order to reduce their visual impact. New underground power and telephone lines would be installed along the county road west of the park to serve the new visitor center/administrative building and the maintenance building. These new lines would also provide service to the historic core area, and the existing service lines from the north would be removed. Electric service to the existing picnic area would either remain on the north side of Kansas Highway 156, in which case this service line would be placed underground from the intersection of the county road and Kansas Highway 156 to the picnic area, or a new line would be extended underground from the historic core area to the picnic area. A new natural gas line would be extended to the visitor center/administration building.

## Removals

Several modern features and structures would be removed from the historic core or its viewshed to restore the historic scene to the extent possible and practical. Motor vehicles, except service vehicles, would be barred from the historic core by removing nonhistoric roads, the access road from the picnic area to the handicapped parking lot, the highway bridge, and the handicapped parking area. The existing gravel parking lot and fee collection station would be removed and those functions relocated to the new visitor center. The irrigation ditches south of the historic core would be filled and graded and the disturbed area restored to prairie grassland.

The administrative, visitor center, and maintenance storage functions would also be removed from the historic core.

## Site Work

Site work would include the signs called for in alternative two, plus vehicle and pedestrian access improvements. A new paved access road and parking lot would be built at the visitor center. Intersection improvements, such as turn lanes, would be made at the county road intersections with Kansas Highway 156 and the park access road. New paved trails would be built and a new pedestrian bridge constructed over the Pawnee River. Existing trails would be paved. The remaining site work would consist mainly of removing nonhistoric roads, the existing entrance road, parking, fee collection station, highway bridge, accessible parking, and irrigation ditches. All disturbed areas would be revegetated. The main park sign would be at the intersection of Kansas Highway 156 and the county road; the smaller park sign would be where the access road intersects the county road at the new visitor center.

## **Accessibility**

Accessibility would be achieved as described in alternative two, except that the construction materials might vary to better conform to the historic period.

## **Modern Uses Of Historic Structures**

Modern uses of the historic structures would be limited. Barracks HS-1 would maintain its existing restrooms and storm shelter, plus a small interpretive work space, and living history support facilities. The restored mess hall would become a staging area for school groups, relieving some of the congestion in the visitor center. The old commissary storehouse HS-5 would continue to house water treatment and electrical distribution equipment. All other modern functions would be relocated outside the historic core as described in alternative two.

## **BOUNDARY ADJUSTMENTS AND LAND PROTECTION**

Development would remove modern intrusions from the historic core area and visually screen it using the vegetation along the Pawnee River. If it becomes possible to acquire visual easements to the south of the fort within the viewshed of the historic core area, such opportunities should be carefully considered.

Since Fort Larned is only 30 acres below its legislated maximum size of 750 acres, there is not enough room left to effectively expand the boundary to protect the southern viewshed. Though not an issue for this draft general management plan amendment/development concept plan, the acquisition of scenic easements to the south should be explored in the next revision of the land protection plan, and recommendations should be made to accomplish any desired viewshed protection. In the meantime the park should continue to work with adjacent land owners to develop cooperative agreements or other mutually satisfactory arrangements to avoid any need for boundary adjustments and easement acquisitions.

## **PLAN IMPLEMENTATION**

### **Legislative Actions Required To Permit Action To Occur**

If a boundary adjustment is necessary, as in the case of any visual easement acquisition, the boundary change land acquisition funds would have to be legislatively approved.

### **Additional Studies Required**

This alternative would require updates of historic furnishings reports and historic structures reports, a cultural landscape report, and an archeological survey and data recovery program. These updates, reports, and surveys should be accomplished prior to design and construction to ensure that all compliance regulations have been fulfilled. The cost of the updates would

be about \$35,000 for each building under study. The cultural landscape report would cost about \$65,000.

## Phasing

There are advantages to phasing this alternative. Two phases would be adequate, but three might be required to maintain a credible visitor experience.

Phase 1 would include the construction of the visitor center/headquarters development, including curation storage, roadway and access improvements, and all utility work.

Phase 2 would include accessibility measures, wooden lean-to on the old commissary HS-5, historic structure restorations, expansion of the maintenance complex, facility and function relocations, trail work and trail markers, and removals.

Phase 3 would include revegetation and any incomplete items from phase 2.

## Operating Costs

Expansion of the interpretive mission and the increase in facilities to operate and maintain would require five additional FTEs and added annual base funding of \$165,000 (1993 dollars).

TABLE 2: ALTERNATIVE THREE — DEVELOPMENT COST ESTIMATE

| Development Item                                                          | Quantity and Unit | Gross Construction Costs | Advance and Project Planning Costs | Total Project Costs |
|---------------------------------------------------------------------------|-------------------|--------------------------|------------------------------------|---------------------|
| <b>PHASE 1</b>                                                            |                   |                          |                                    |                     |
| <b>Studies Required*</b>                                                  |                   |                          |                                    |                     |
| Historic furnishings report updates<br>Commanding officer's quarters HS-8 | 1s                |                          |                                    | \$35,000            |
| Historic structure report updates                                         |                   |                          |                                    |                     |
| Shops building HS-3 - interior only                                       | 1s                |                          |                                    | \$35,000            |
| New commissary HS-4 - interior only                                       | 1s                |                          |                                    | \$35,000            |
| Old commissary HS-5 - interior only                                       | 1s                |                          |                                    | \$35,000            |
| Quartermaster storehouse HS-6 - interior only                             | 1s                |                          |                                    | \$35,000            |
| Commanding officer's quarters HS-8 - interior only                        | 1s                |                          |                                    | \$35,000            |
| Officer's quarters HS-9 - interior only                                   | 1s                |                          |                                    | \$35,000            |
| Cultural landscape report                                                 | 1s                |                          |                                    | \$65,000            |
| Archeological survey/investigations                                       | 8 ac.             |                          |                                    | \$112,000           |
| Archeological data recovery program<br>Pedestrian bridge crossing         | 1s                |                          |                                    | \$10,000            |
| <b>Structural Development</b>                                             |                   |                          |                                    |                     |
| New visitor center and administration building                            | 8,730 sf          | \$2,401,600              | \$458,300                          | \$2,859,900         |
| Covered parking structure for 3 cars                                      | 720 sf            | \$28,300                 | 5,400                              | 33,700              |
| Visitor center furnishings                                                | 1s                | \$360,200                | 68,700                             | 428,900             |
| Interpretation                                                            |                   |                          |                                    |                     |
| museum exhibits                                                           | 1s                | \$859,000                | \$163,900                          | \$1,022,900         |
| audiovisual                                                               | 1s                | \$292,000                | 55,700                             | 347,700             |
| waysides                                                                  | 12 each           | \$85,000                 | 16,200                             | 101,200             |
| historic furnishings                                                      | 1s                | \$410,000                | 78,200                             | 589,400             |

Alternative Three: Restore Existing Historic Structures

| Development Item                                       | Quantity and Unit | Gross Construction Costs | Advance and Project Planning Costs | Total Project Costs |
|--------------------------------------------------------|-------------------|--------------------------|------------------------------------|---------------------|
| Possible solutions to accessibility concerns           |                   |                          |                                    |                     |
| earth ramp to barracks HS-1                            | 1s                | \$700                    | \$100                              | \$800               |
| earth ramp to barracks HS-2                            | 1s                | \$700                    | 100                                | 800                 |
| barracks boardwalk connection (HS-1 to HS-2)           | 250 sf            | \$3,900                  | 700                                | 4,600               |
| earth ramp to shops building HS-3                      | 1s                | \$700                    | 100                                | 800                 |
| wood porch at shops building HS-3                      | 280 sf            | \$5,500                  | 1,000                              | 6,500               |
| wheel chair lift to new commissary HS-4                | 1s                | \$9,800                  | 1,900                              | 11,700              |
| earth ramp to old commissary HS-5                      | 1s                | \$700                    | 100                                | 800                 |
| earth ramp to quartermaster storehouse HS-6            | 1s                | \$700                    | 100                                | 800                 |
| wheel chair lift to officer's quarters HS-7            | 1s                | \$9,800                  | 1,900                              | 11,700              |
| wheel chair lift to commanding officer's quarters HS-8 | 1s                | \$9,800                  | 1,900                              | 11,700              |
| wheel chair lift to officer's quarters HS-9            | 1s                | \$9,800                  | 1,900                              | 11,700              |
| New curation storage and work area                     | 2,560 sf          | \$838,400                | \$160,000                          | \$998,400           |
| Add wooden lean-to to old commissary HS-5              | 546 sf            | \$17,900                 | \$3,400                            | \$21,300            |
| Restore remainder of quartermaster storehouse HS-6     | 6,100 sf          | \$1,198,700              | \$228,800                          | \$1,427,500         |
| Restore officer's quarters HS-9 to the historic period | 3,651 sf          | \$669,600                | \$127,800                          | \$797,400           |
| Maintenance building addition                          | 750 sf            | \$117,900                | \$22,500                           | \$140,400           |
| New maintenance storage building                       | 1,200 sf          | \$94,300                 | \$18,000                           | \$112,300           |
| <b>Site Development</b>                                |                   |                          |                                    |                     |
| Construct paved access road and visitor parking        | 5,700 sy          | \$336,000                | \$64,100                           | \$400,100           |
| Construct intersection improvements                    | 1,750 sy          | \$114,600                | \$21,900                           | \$136,500           |
| Construct pedestrian bridge (10' wide x 200' long)     | 2,000 sf          | \$91,700                 | \$17,500                           | \$109,200           |
| Install signs                                          |                   |                          |                                    |                     |
| new large entrance sign                                | 1 each            | \$13,100                 | \$2,500                            | \$15,600            |
| new small entrance sign                                | 1 each            | \$6,600                  | 1,300                              | 7,900               |
| directional signs to ruins site                        | 5 each            | \$1,600                  | 300                                | 1,900               |
| <b>Utilities</b>                                       |                   |                          |                                    |                     |
| New water filtration system                            | 1s                | \$366,800                | \$70,000                           | \$436,800           |
| New water distribution lines                           | 7,100 sf          | \$279,000                | \$53,200                           | \$332,200           |
| Bury on-site overhead utility lines                    | 5,800 lf          | \$159,600                | \$30,500                           | \$190,100           |
| New underground electric line (along county road)      | 4,100 lf          | \$91,300                 | \$17,400                           | \$108,700           |
| New underground telephone line (along county road)     | 4,100 lf          | \$80,600                 | \$15,400                           | \$96,000            |
| New natural gas service line                           | 600 lf            | \$15,700                 | \$3,000                            | \$18,700            |
| <b>Removals</b>                                        |                   |                          |                                    |                     |
| Obliterate and reclaim irrigation ditches              | 15,600 cy         | \$143,100                | \$27,300                           | \$170,400           |
| <b>Phase 1 Subtotal</b>                                |                   | <b>\$9,124,700</b>       | <b>\$1,741,100</b>                 | <b>\$11,297,800</b> |

**PHASE 2**

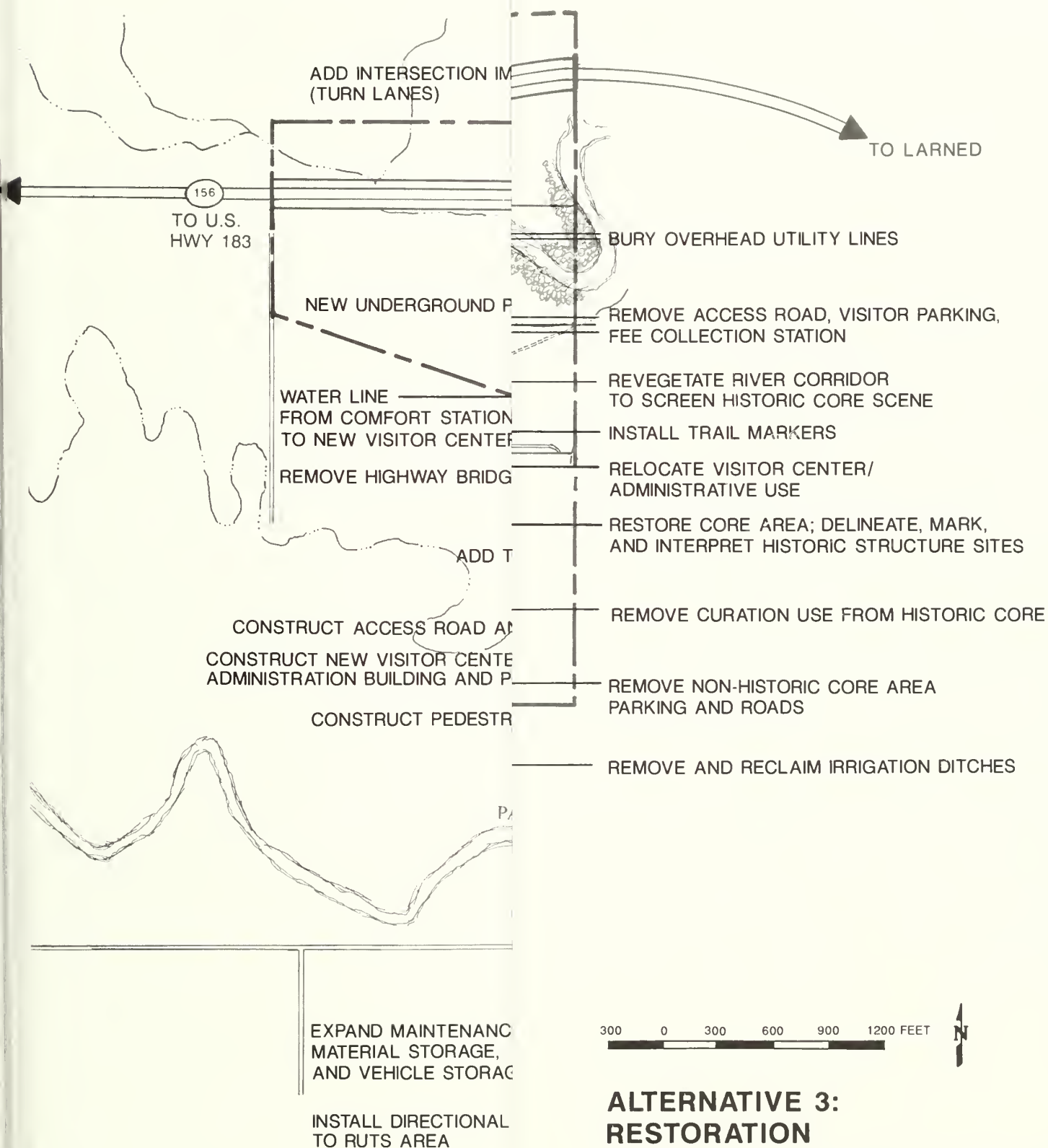
|                                                                   |          |             |           |             |
|-------------------------------------------------------------------|----------|-------------|-----------|-------------|
| <b>Structural Development</b>                                     |          |             |           |             |
| Restore barracks HS-1 to historic period                          | 7,961 sf | \$1,460,000 | \$278,600 | \$1,738,600 |
| Restore remainder of new commissary HS-4 to historic period       | 1,930 sf | \$278,100   | \$53,100  | \$331,200   |
| Remove curation/collections from new commissary HS-4              | 1,930 sf | \$88,500    | \$16,900  | \$105,400   |
| Restore remainder of old commissary HS-5 to historic period       | 1,208 sf | \$221,500   | \$42,300  | \$263,800   |
| Restore commanding officer's quarters HS-8 to the historic period | 3,155 sf | \$578,600   | \$110,400 | \$689,000   |
| Remodel historic core support facilities (barracks HS-1)          | 700 sf   | \$137,600   | \$26,300  | \$163,900   |

ALTERNATIVES

| Development Item                                             | Quantity and Unit | Gross Construction Costs | Advance and Project Planning Costs | Total Project Costs |
|--------------------------------------------------------------|-------------------|--------------------------|------------------------------------|---------------------|
| Security system for historic buildings                       | 46,100 sf         | \$181,200                | \$34,600                           | \$215,800           |
| <b>Site Development</b>                                      |                   |                          |                                    |                     |
| Pave existing trails (6' wide, asphalt)                      | 5,000 lf          | \$45,900                 | \$8,800                            | \$54,700            |
| Construct interpretive trails (6' wide, asphalt)             | 2,700 lf          | \$24,800                 | \$4,700                            | \$29,500            |
| Install signs, trail markers                                 | 10 each           | \$3,300                  | \$600                              | \$3,900             |
| <b>Removals</b>                                              |                   |                          |                                    |                     |
| Remove and obliterate nonhistoric roads in the historic core | 2,500 sy          | \$32,800                 | \$6,300                            | \$39,100            |
| Remove and obliterate entrance road (asphalt)                | 6,700 sy          | \$87,800                 | \$16,800                           | \$104,600           |
| Remove and obliterate gravel parking lot                     | 11,100 sy         | \$145,400                | \$27,700                           | \$173,100           |
| Remove and obliterate entrance road bridge                   | 1,350 sy          | \$26,500                 | \$5,100                            | \$31,600            |
| Remove and obliterate fee collection station                 | 100 sf            | \$700                    | \$100                              | \$800               |
| <b>Phase 2 Subtotal</b>                                      |                   | <b>\$3,312,700</b>       | <b>\$632,300</b>                   | <b>\$3,945,000</b>  |
| <b>PHASE 3</b>                                               |                   |                          |                                    |                     |
| <b>Site Development</b>                                      |                   |                          |                                    |                     |
| Revegetation                                                 | 10.0 acres        | \$52,400                 | \$10,000                           | \$62,400            |
| <b>Phase 3 Subtotal</b>                                      |                   | <b>\$52,400</b>          | <b>\$10,000</b>                    | <b>\$62,400</b>     |
| <b>GRAND TOTAL - ALL PHASES</b>                              |                   | <b>\$12,489,800</b>      | <b>\$2,383,400</b>                 | <b>\$15,305,200</b> |

sf = square feet, lf = linear feet, ls = lump sum, ac = acre

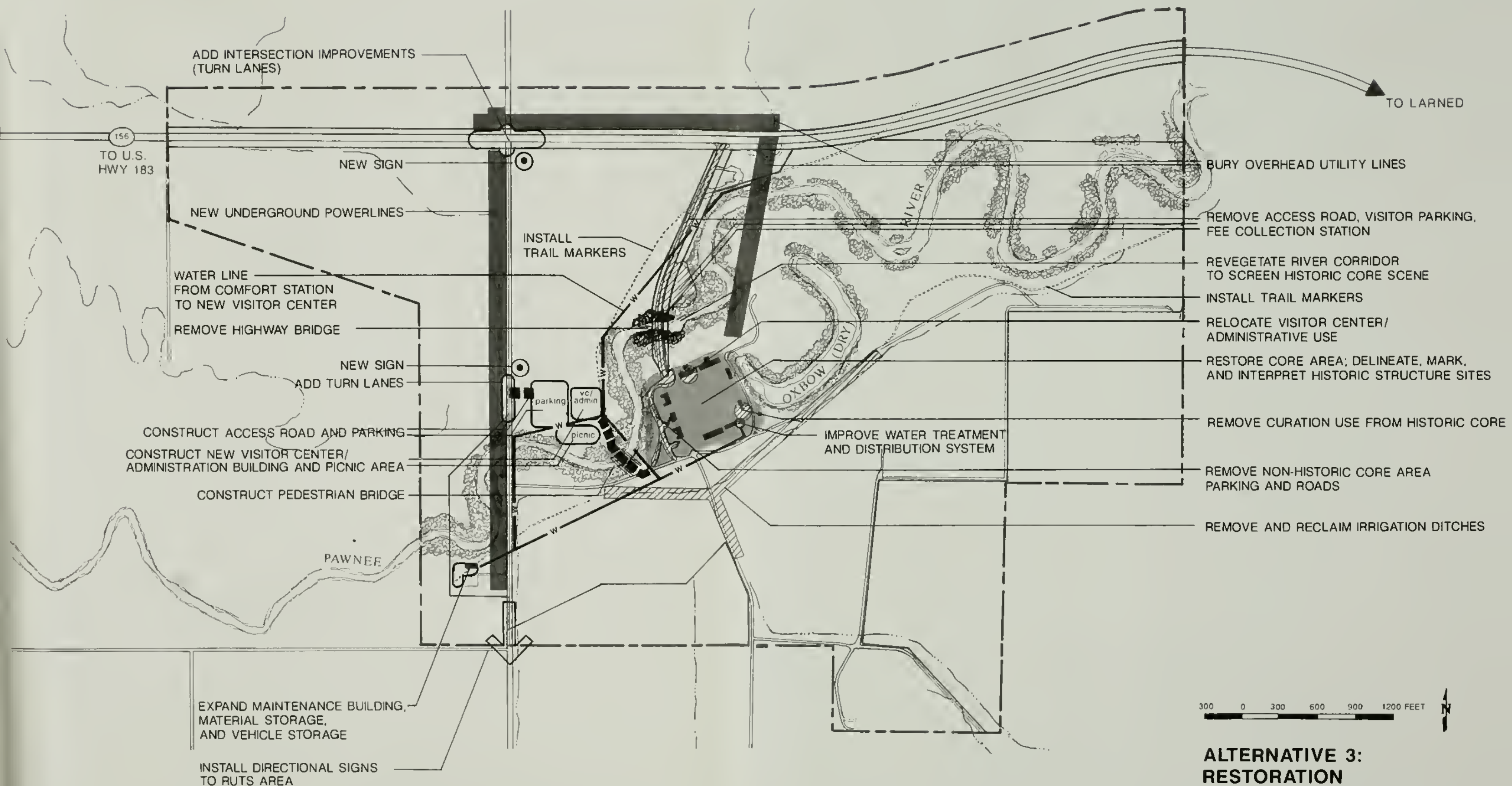
\* The studies required prior to design and construction activity do not require the addition of any advance and project planning funding; therefore no such funds have been included in the project cost totals.



### ALTERNATIVE 3: RESTORATION

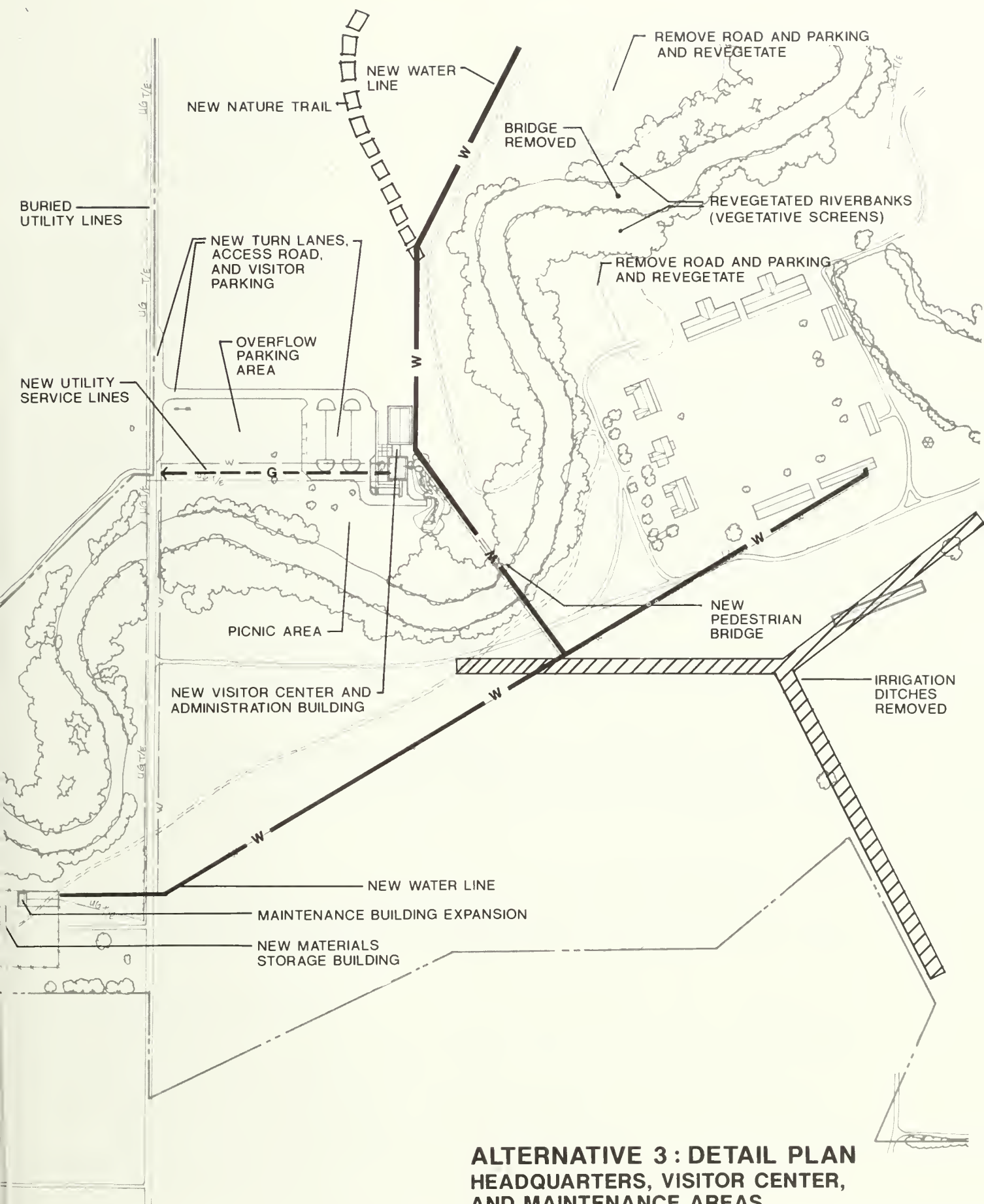
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### ALTERNATIVE 3: RESTORATION

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### ALTERNATIVE 3 : DETAIL PLAN HEADQUARTERS, VISITOR CENTER, AND MAINTENANCE AREAS

#### FORT LARNED NATIONAL HISTORIC SITE

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## **ALTERNATIVE FOUR: RECONSTRUCT KEY STRUCTURES AND RESTORE EXISTING HISTORIC STRUCTURES**

### **GENERAL**

All historic structures and the historic core site would be restored to their 1868-1878 appearance. Several structures no longer extant, but deemed key to the interpretive mission of the park would be reconstructed. The visitor center, administrative, operational, and curation functions would be as in alternative three. Modern intrusions on the historic scene and modern uses, would be removed from the historic core.

### **LAND USE AND MANAGEMENT**

#### **Existing Land Use**

The surrounding land use pattern would be the same as in alternative one.

#### **Management Zoning**

Management zoning would be the same as in alternative three.

### **RESOURCES MANAGEMENT**

#### **Natural Resources**

The management of natural resources would be the same as in alternative three, except that removal of modern intrusions could affect vegetation species diversity by eliminating some exotic plant species.

#### **Cultural Resources**

Cultural resource management would be generally the same as in alternative three, but key structures such as the sutler's complex, the adjutant's office, and the cavalry stables would be reconstructed.

### **VISITOR USE**

#### **Access, Circulation, and Parking**

This would be the same as in alternative three.

## **Interpretation and Visitor Experience**

This would be as described in alternative three, except that there would be an increase in living history demonstrations. Interpretation would focus on the fort's historic period (1868-1878).

## **Recreational and Cultural Activities**

The existing picnic area would be removed. Recreation would be limited to the new picnic area.

## **Visitor Services**

These services would be as described in alternative three, except that no modern facilities would be provided within the historic core area.

## **Visitor Capacity**

Visitor capacity would be as in alternative one.

## **Visitor Facilities to be Retained or Expanded**

A new picnic area would be developed near the visitor center.

## **Visitor Facilities to be Removed or Restricted**

These would be the same as in alternative three, except that the existing picnic area would be removed.

## **PARK OPERATIONS**

Personnel requirements would be the same as alternative three.

## **GENERAL DEVELOPMENT**

A new visitor center and administrative building would be constructed west of the Pawnee River channel and the historic core area. All headquarters, office, maintenance, and visitor facilities now housed in historic structures would be relocated to this new structure. All nonhistoric functions and visual intrusions would be removed from the viewshed of the historic core area. All existing historic structures and the fort landscape would be restored, including restoration of the historic stream flow, and those buildings key to the interpretive message would be reconstructed.

Overhead utilities would be buried within the park boundaries. Signs would be installed at the new park entrance and to direct visitors to the Santa Fe Trail ruins site. Trail markers would delineate the Santa Fe Trail and other trails in the park.

### **Visitor Center**

The new visitor center would be the same as in alternative three.

### **Administration and Headquarters**

The administration and headquarters facilities would be the same as in alternative three.

### **Maintenance**

This alternative strives to recreate the historic scene. To achieve this would require restoration and reconstruction of the historic structures and, as possible, the historic scene. The existing maintenance building and storage yard are within the fort's viewshed, and it is proposed that they be removed and a new maintenance area constructed at the north edge of the park where they would not be seen from the historic core. A new 2,900-square-foot maintenance facility would include a heated paint storage room, heated space for vehicle storage, and increased work space.

A 1,200-square-foot storage facility would house maintenance materials and equipment. It would be weather-tight, concrete-floored, lighted, and securable. This building would accommodate the materials and equipment now stored in historic structures, which would make it possible to totally restore these buildings.

Other developments at the new maintenance area would include a new water treatment and distribution system and a separate access road.

### **Vehicle Access, Circulation, and Parking**

Vehicle access would be generally as in alternative three, except that access to the maintenance area would require a new road. There would be no direct access to the historic core from maintenance.

Primary vehicle access would be from the county road west of the park. This access and any other vehicular circulation development, including parking, would be as described in alternative three.

### **Pedestrian Circulation**

Pedestrian circulation would originate from the visitor center as described in alternative three. Trails would be built with a stabilized, all-weather surface, but would retain the appearance of

the historic period. The trail in the northwest corner of the park would no longer extend to the picnic area, and the picnic area would be removed. The trail would loop through the revegetated prairie area and return to the visitor center. All other aspects of pedestrian circulation and trail development would be identical to those in alternative three.

## **Building Restoration and Reconstruction**

The fort has a high degree of historic integrity that this alternative strives to maintain. All the historic buildings would be restored to the 1868-1878 appearance, and all modern uses would be removed from the historic core. Facilities essential for life safety and resource protection might be retained within the core, but they would have to blend with the historic scene. Reconstruction of the adjutant's office, cavalry stable, and sutler's complex would restore some critical elements and would fill in major gaps in the interpretive story.

The reconstruction of these buildings would have a positive visual impact and would be essential to re-establish the architectural character of Fort Larned. They would provide the essential setting for the interpretation of key elements of the fort's history.

Buildings considered key to the visitor experience would be reconstructed, provided they meet the criteria set forth in NPS *Management Policies* and NPS-28, *Cultural Resource Management Guidelines*. The three structures considered most important to accomplish the objectives of this alternative are the sutler's store complex, the adjutant's office, and the cavalry stables.

**Sutler's Complex.** Sutlers were probably the most influential economic force in the unsettled areas of the west. They were located at almost every fort and sold food stuffs, dry goods, spirits, tobacco, and notions to a captive market of officers, their families, and enlisted men. Civilians and Indians also traded at the sutler's stores. The complex served as the post community center and played a major role in the daily operations of the fort. It contained a saloon with a billiards table, mess house, and store, and was used for evening lounging. The Indian Agency at Fort Larned was headquartered in the sutler complex and the Indians' annuities stored there.

The Sutler's complex was intricately involved in the life of the fort. Reconstruction would provide the most effective means to interpret the interrelationships of the sutler with all aspects of military life at Fort Larned. The sutler also supplied travelers and traders on the Santa Fe Trail, and changed the Plains Indians' way of life through trade. As headquarters for the Indian Agency and warehouse for Indian annuities, the sutler's complex would also be the best interpretive site to explain the role of the Department of Interior and the conflict between the military and the Indian Agents. Sketches and photographs show this structure from several angles. Military records also provide information about dimensions and building materials. Archeological work has located the original location of the complex.

**Adjutant's Office.** The adjutant's office served as the nerve center for the entire military community. All official reports, letters, and dispatches were routed through it for the commanding officer's review and approval. The adjutant was usually the junior officer at the post. He was responsible for writing reports and letters and served as the liaison between the

enlisted men and the officers. The reconstruction of this small building would provide the best setting for interpreting the adjutant's essential activities.

**Cavalry Stables.** This wooden structure, 247 feet by 28 feet, was built in 1867. It was designed exclusively for the use of Company A of the 10th United States Cavalry, the buffalo soldiers, as African-American servicemen were then called. This was one of only two buffalo soldier units in the U.S. Army at the time, the first buffalo soldier unit ever assigned field duty, and the only such unit ever stationed at Fort Larned. The burning of the stables in 1869 bears testimony to the racial tension between white and African-American soldiers. The fire destroyed not only most of the buffalo soldiers' horses, but also their ordnance and almost all of their clothing, items that they were not allowed to store in the fort's barracks.

No known photograph of the stables exists, but military records indicate its dimensions. A complete detailed listing of the items that were in the stables when they burned does exist. Archeological field work is needed to locate its exact original location.

If the cavalry stables were reconstructed, they could also serve as protected storage space for large artifacts, such as the two army freight wagons and the rare Rucker army ambulance. These wagons are stored outside and are exposed to the weather. The cavalry stables would also be used to stable horses of visiting living history cavalry units and could be used in the future to stable horses used in interpretive programs given by Fort Larned staff.

Reconstruction of the cavalry stables would allow the interpretation of the buffalo soldier's role and the racial tension common in the U.S. Army at that time. Reconstructing this structure is essential to the interpretive program at Fort Larned because no stables have survived and because the stables were an essential element of the cavalry operation.

## Utilities

The water treatment and distribution systems would be the same as in alternative three except that the water treatment facility would be relocated to a new maintenance complex along Kansas Highway 156 north of the Pawnee River.

New power, telephone, and water lines would be extended to the new maintenance facility. All modifications would be the same as in alternative three, including overhead utility line removals, relocations, or burials necessary to reduce visual impacts and restore the historic scene.

## Removals

All modern features, functions, and structures would be removed from the historic core to restore the historic scene to the greatest extent possible. This would include nonhistoric roads within the core area, the access road from the picnic area to the handicapped parking lot, the highway bridge, the handicapped parking area, and the existing fee collection station. The irrigation ditches south of the historic core, which would be filled and graded and the disturbed area revegetated to be compatible with prairie restoration efforts.

## **Site Work**

Site work would be as in alternative three.

## **Accessibility**

Accessibility would be as in alternatives two and three.

## **Modern Uses of Historic Structures**

All modern uses within the historic structures would be removed.

## **BOUNDARY ADJUSTMENTS AND LAND PROTECTION**

Boundary adjustments would be as in alternative three.

## **PLAN IMPLEMENTATION**

### **Legislative Actions Required To Permit Action To Occur**

These would be the same as in alternative three.

### **Additional Studies Required**

This alternative would require updates of historic furnishings reports and historic structures reports. It would require historic structure and historic furnishings reports for the sutler's store complex, adjutant's office, and the cavalry stable as well as a cultural landscape report, and archeological survey and data recovery program. These updates, reports, and surveys should be done prior to design and construction to ensure compliance with all regulations. The cost of the updates would be about \$35,000 for each building studied. The new historic structure and furnishings reports would cost about \$120,000 for the sutler's store complex, \$60,000 for the adjutant's office, and \$95,000 for the cavalry stable. The cultural landscape report would cost about \$65,000. The archeological survey would cost about \$210,000. The archeological data recovery program would cost about \$100,000 each for the sutler's store complex, adjutant's office, and cavalry stable; the pedestrian bridge site would cost about \$10,000.

## **Phasing**

Work can be phased as in alternative three. The major differences would be the reconstruction of historic structures, the construction of new maintenance facilities, and the removal/relocation/reconstruction of utility systems.

## **Operating Costs**

Operating costs would be the same as in alternative three.

TABLE 3: ALTERNATIVE FOUR — DEVELOPMENT COST ESTIMATE

| Development Item                                                          | Quantity and Unit | Gross Construction Costs | Advance and Project Planning | Total Project Costs |
|---------------------------------------------------------------------------|-------------------|--------------------------|------------------------------|---------------------|
| <b>PHASE 1</b>                                                            |                   |                          |                              |                     |
| <b>Studies Required*</b>                                                  |                   |                          |                              |                     |
| Historic furnishings report updates<br>Commanding officer's quarters HS-8 | ls                |                          |                              | \$35,000            |
| Historic structure report updates                                         |                   |                          |                              | \$35,000            |
| Shops building HS-3 - interior only                                       | ls                |                          |                              | \$35,000            |
| New commissary HS-4 - interior only                                       | ls                |                          |                              | \$35,000            |
| Old commissary HS-5 - interior only                                       | ls                |                          |                              | \$35,000            |
| Quartermaster storehouse HS-6 - interior only                             | ls                |                          |                              | \$35,000            |
| Commanding officer's quarters HS-8 - interior only                        | ls                |                          |                              | \$35,000            |
| Officer's quarters HS-9 - interior only                                   | ls                |                          |                              | \$35,000            |
| New historic structure/furnishings reports                                |                   |                          |                              |                     |
| Sutler's store complex                                                    | ls                |                          |                              | \$120,000           |
| Adjutant's office                                                         | ls                |                          |                              | \$60,000            |
| Cavalry stable                                                            | ls                |                          |                              | \$95,000            |
| Cultural landscape report                                                 | ls                |                          |                              | \$65,000            |
| Archeological survey/investigations                                       | 15 ac.            |                          |                              | \$210,000           |
| Archeological data recovery program                                       |                   |                          |                              |                     |
| Sutler's store complex                                                    | ls                |                          |                              | \$100,000           |
| Adjutant's office                                                         | ls                |                          |                              | \$100,000           |
| Cavalry stable                                                            | ls                |                          |                              | \$100,000           |
| Pedestrian bridge                                                         | ls                |                          |                              | \$10,000            |
| <b>Structural Development</b>                                             |                   |                          |                              |                     |
| New visitor center and administration building                            | 8,730 sf          | \$2,401,600              | \$458,300                    | \$2,859,900         |
| Visitor center furnishings                                                | ls                | \$360,200                | \$68,700                     | \$428,900           |
| Covered parking structure for 3 cars                                      | 720 sf            | \$28,300                 | \$5,400                      | \$33,700            |
| Interpretation                                                            | 3,000 sf          | \$858,000                | \$163,700                    | \$1,021,700         |
| museum exhibits                                                           | ls                | \$292,000                | 55,700                       | 347,700             |
| audiovisual                                                               | 12 each           | \$85,200                 | 16,300                       | 101,500             |
| waysides                                                                  | ls                | \$410,000                | 78,200                       | 488,200             |
| historic furnishings                                                      |                   |                          |                              |                     |
| Possible solutions to accessibility concerns*                             |                   |                          |                              |                     |
| earth ramp to barracks HS-1                                               | ls                | \$700                    | \$100                        | \$800               |
| earth ramp to barracks HS-2                                               | ls                | \$700                    | 100                          | 800                 |
| barracks boardwalk connection (HS-1/HS-2)                                 | 250 sf            | \$3,900                  | 700                          | 4,600               |
| earth ramp to shops building HS-3                                         | ls                | \$700                    | 100                          | 800                 |
| wood porch at shops building HS-3                                         | 280 sf            | \$5,500                  | 1,000                        | 6,500               |
| wheel chair lift to new commissary HS-4                                   | ls                | \$9,800                  | 1,900                        | 11,700              |
| earth ramp to old commissary HS-5                                         | ls                | \$700                    | 100                          | 800                 |
| earth ramp to quartermaster storehouse HS-6                               | ls                | \$700                    | 100                          | 800                 |
| wheel chair lift officer's quarters HS-7                                  | ls                | \$9,800                  | 1,900                        | 11,700              |
| wheel chair lift commanding officer's quarters HS-8                       | ls                | \$9,800                  | 1,900                        | 11,700              |
| wheel chair lift officer's quarters HS-9                                  | ls                | \$9,800                  | 1,900                        | 11,700              |
| New curation storage and work area                                        | 2,560 sf          | \$838,400                | \$160,000                    | \$998,400           |
| Add wooden lean-to to old commissary HS-5                                 | 546 sf            | \$17,900                 | \$3,400                      | \$21,300            |
| Restore remainder of quartermaster storehouse HS-6                        | 6,100 sf          | \$1,198,700              | \$228,800                    | \$1,427,500         |
| Restore officer's quarters HS-9 to the historic period                    | 3,651 sf          | \$669,600                | \$127,800                    | \$797,400           |
| Reconstruct sutler's store (26' x 50', stone)                             | 1,300 sf          | \$229,900                | \$43,900                     | \$273,800           |
| Reconstruct sutler's mess room (21½' x 34½', frame)                       | 742 sf            | \$106,900                | \$20,400                     | \$127,300           |
| Reconstruct sutler's residence (16½' x 30½', frame)                       | 623 sf            | \$89,800                 | \$17,100                     | \$106,900           |
| Furnish sutler's complex                                                  | ls                | \$106,700                | \$20,400                     | \$127,100           |

| Development Item                                                                          | Quantity and Unit | Gross Construction Costs | Advance and Project Planning | Total Project Costs |
|-------------------------------------------------------------------------------------------|-------------------|--------------------------|------------------------------|---------------------|
| Reconstruct adjutant's office (15' x 30', frame)                                          | 450 sf            | \$64,800                 | \$12,400                     | \$77,200            |
| Furnish adjutant's office                                                                 | ls                | \$16,200                 | \$3,100                      | \$19,300            |
| Reconstruct cavalry stable (247' x 28')                                                   | 6,916 sf          | \$588,900                | \$112,400                    | \$701,300           |
| Construct new maintenance building                                                        | 2,900 sf          | \$436,900                | \$83,400                     | \$520,300           |
| Construct new maintenance storage building                                                | 1,200 sf          | \$94,300                 | \$18,000                     | \$112,300           |
| <b>Site Development</b>                                                                   |                   |                          |                              |                     |
| Install signs                                                                             |                   |                          |                              |                     |
| new large entrance sign                                                                   | 1 each            | \$13,100                 | \$2,500                      | \$15,600            |
| new small entrance sign                                                                   | 2 each            | \$13,100                 | 2,500                        | 15,600              |
| directional signs to ruts site                                                            | 5 each            | \$1,600                  | 300                          | 1,900               |
| Construct new maintenance yard                                                            | 27,200 sf         | \$14,100                 | \$2,700                      | \$16,800            |
| Install above-ground fuel tank (1,000 gallon w/pump) and fuel spill containment structure | ls                | \$23,600                 | \$4,500                      | \$28,100            |
| Construct paved access road and visitor parking                                           | 5,700 sy          | \$336,000                | \$64,100                     | \$400,100           |
| Construct intersection improvements                                                       | 1,750 sy          | \$114,600                | \$21,900                     | \$136,500           |
| Construct pedestrian bridge (10' wide x 200' long)                                        | 2,000 sf          | \$91,700                 | \$17,500                     | \$109,200           |
| Construct maintenance access road                                                         | 670 sy            | \$17,600                 | \$3,400                      | \$21,000            |
| <b>Utilities</b>                                                                          |                   |                          |                              |                     |
| New potable water plant (50,000 GPD)                                                      | ls                | \$851,500                | \$162,500                    | \$1,014,000         |
| New water distribution lines                                                              | 6,150 lf          | \$241,700                | \$46,100                     | \$287,800           |
| Bury on-site overhead utility lines                                                       | 5,800 lf          | \$159,600                | \$30,500                     | \$190,100           |
| New underground electric line (along county road)                                         | 4,100 lf          | \$91,300                 | \$17,400                     | \$108,700           |
| New natural gas line to visitor center/admin. bldg.                                       | 600 lf            | \$15,700                 | \$3,000                      | \$18,700            |
| New natural gas line to maintenance building                                              | 250 lf            | \$6,600                  | \$1,300                      | \$7,900             |
| Install new electric transformer                                                          | ls                | \$26,200                 | \$5,000                      | \$31,200            |
| Install wiring to new units                                                               | ls                | \$13,100                 | \$2,500                      | \$15,600            |
| <b>Removals</b>                                                                           |                   |                          |                              |                     |
| Obliterate and reclaim irrigation ditches                                                 | 15,600 cy         | \$143,100                | \$27,300                     | \$170,400           |
| <b>Phase 1 Subtotal</b>                                                                   |                   | <b>\$11,120,600</b>      | <b>\$2,122,200</b>           | <b>\$14,342,800</b> |
| <b>PHASE 2</b>                                                                            |                   |                          |                              |                     |
| <b>Structural Development</b>                                                             |                   |                          |                              |                     |
| Restore barracks HS-1 to historic period                                                  | 7,691 sf          | \$1,410,500              | \$269,200                    | \$1,679,700         |
| Restore remainder of new commissary HS-4 to historic period                               | 1,930 sf          | \$278,100                | \$53,100                     | \$331,200           |
| Remove curation/collections from barracks HS-1                                            | 1,930 sf          | \$88,500                 | \$16,900                     | \$105,400           |
| Restore remainder of old commissary HS-5 to historic period                               | 1,208 sf          | \$221,500                | \$42,300                     | \$263,800           |
| Restore commanding officer's quarters HS-8 to the historic period                         | 3,155 sf          | \$578,600                | \$110,400                    | \$689,000           |
| Security system for historic buildings                                                    | 46,100 sf         | \$181,200                | \$34,600                     | \$215,800           |
| <b>Site Development</b>                                                                   |                   |                          |                              |                     |
| Construct interpretive trails (dirt)                                                      | 2,700 lf          | \$23,000                 | \$4,400                      | \$27,400            |
| Install signs and trail markers                                                           | 10 each           | \$3,300                  | \$600                        | \$3,900             |
| <b>Removals</b>                                                                           |                   |                          |                              |                     |
| Remove and obliterate nonhistoric roads within the historic core                          | 2,500 sy          | \$32,800                 | \$6,300                      | \$39,100            |
| Remove and obliterate entrance road (asphalt)                                             | 6,700 sy          | \$87,800                 | \$16,800                     | \$104,600           |

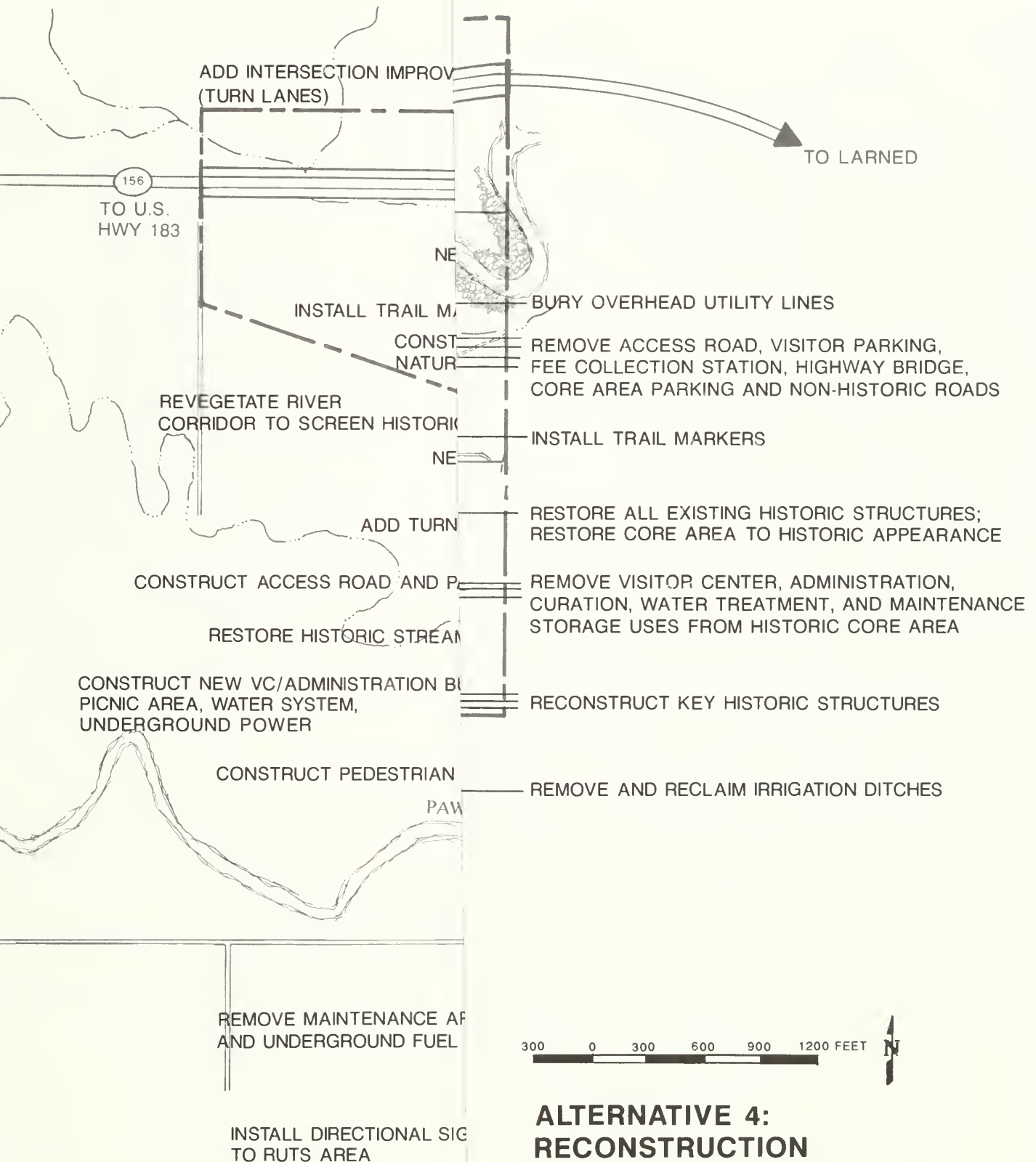
| Development Item                                                                                     | Quantity and Unit | Gross Construction Costs | Advance and Project Planning | Total Project Costs |
|------------------------------------------------------------------------------------------------------|-------------------|--------------------------|------------------------------|---------------------|
| Remove and obliterate gravel parking lot                                                             | 11,100 sy         | \$145,400                | \$27,700                     | \$173,100           |
| Remove and obliterate entrance road bridge                                                           | 1,350 sy          | \$26,500                 | \$5,100                      | \$31,600            |
| Remove and obliterate fee collection station                                                         | 100 sf            | \$700                    | \$100                        | \$800               |
| Remove water treatment plant, electric transformer & distribution equipment from old commissary HS-5 | 1,208 sf          | \$63,300                 | \$12,100                     | \$75,400            |
| Obliterate existing maintenance building                                                             | 2,128 sf          | \$13,900                 | \$2,700                      | \$16,600            |
| Obliterate existing maintenance yard                                                                 | 27,200 sf         | \$213,800                | \$40,800                     | \$254,600           |
| Remove buried fuel tank                                                                              | 1 each            | \$3,300                  | \$600                        | \$3,900             |
| <b>Phase 2 Subtotal</b>                                                                              |                   | <b>\$3,372,200</b>       | <b>\$643,700</b>             | <b>\$4,015,900</b>  |

### PHASE 3

|                                 |             |                     |                    |                     |
|---------------------------------|-------------|---------------------|--------------------|---------------------|
| <b>Site Development</b>         |             |                     |                    |                     |
| Revegetate prairie              | 10.25 acres | \$53,700            | \$10,200           | \$63,900            |
| <b>Phase 3 Subtotal</b>         |             | <b>\$53,700</b>     | <b>\$10,200</b>    | <b>\$63,900</b>     |
| <b>GRAND TOTAL - ALL PHASES</b> |             | <b>\$14,546,500</b> | <b>\$2,776,100</b> | <b>\$18,422,600</b> |

sf = square feet, lf = linear feet, ls = lump sum, ac = acre

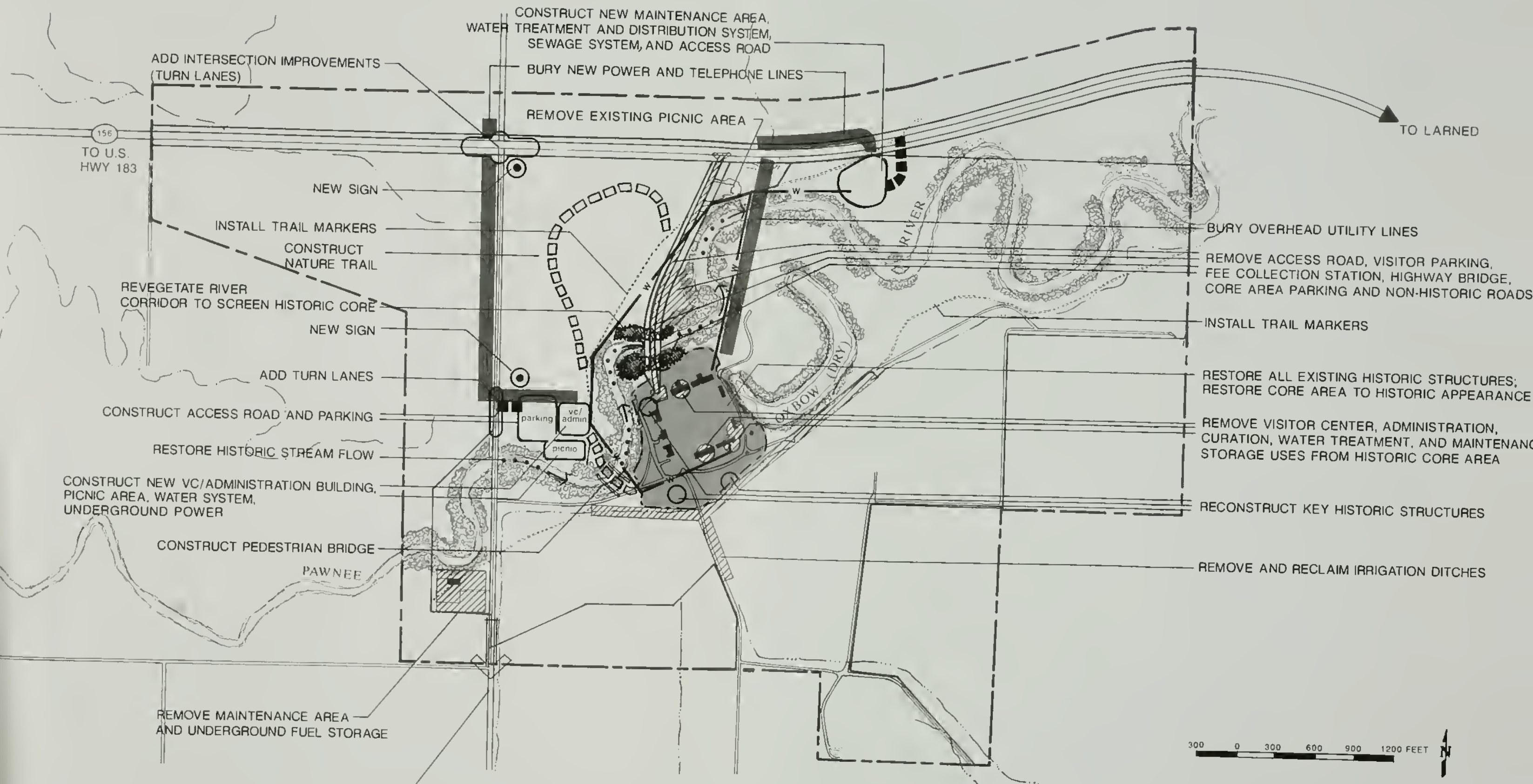
\* The studies required prior to design and construction activity do not require the addition of any advance and project planning funding; therefore no such funds have been included in the project cost totals.



## ALTERNATIVE 4: RECONSTRUCTION

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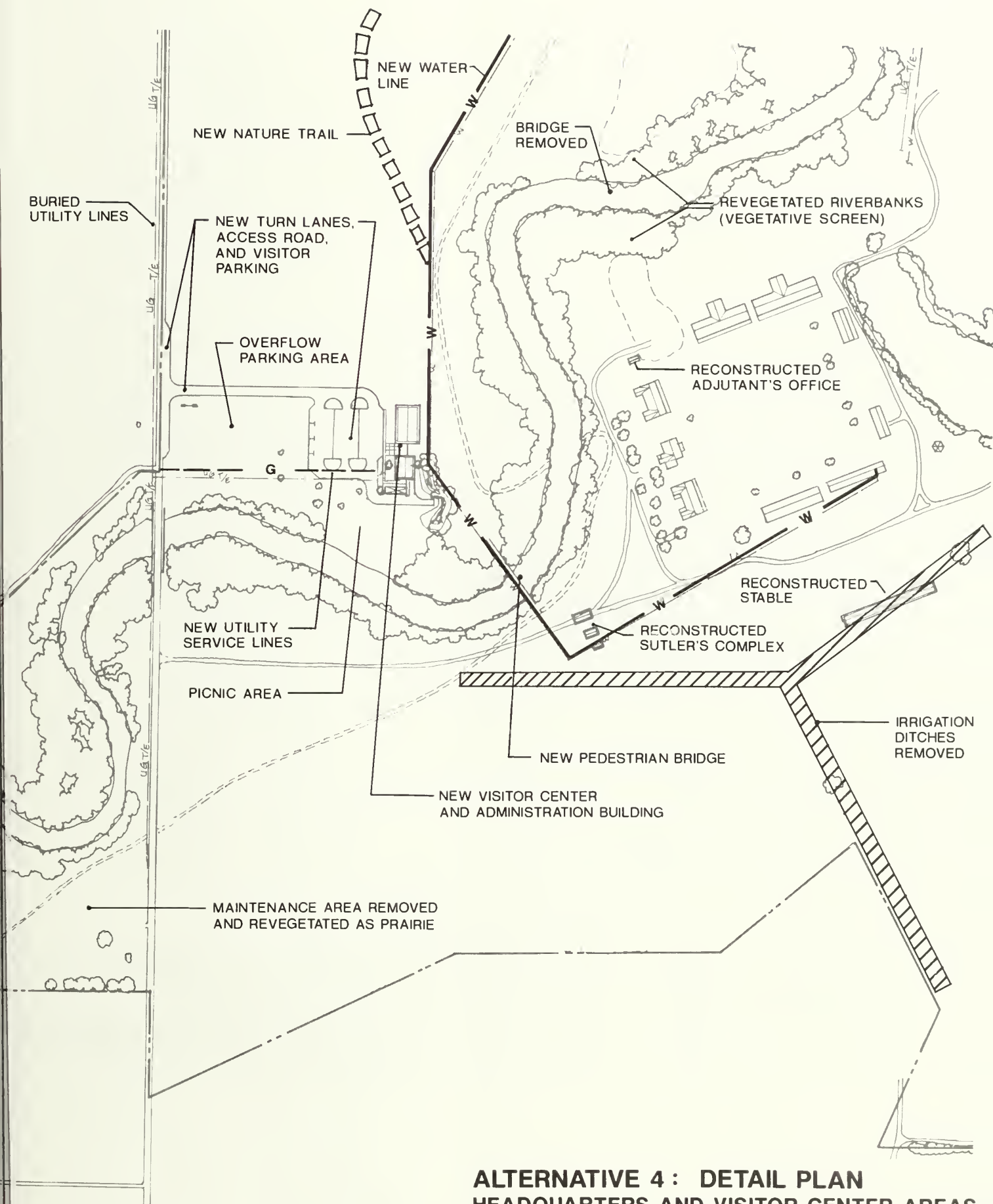
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## ALTERNATIVE 4: RECONSTRUCTION

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## ALTERNATIVE 4 : DETAIL PLAN HEADQUARTERS AND VISITOR CENTER AREAS

### FORT LARNED NATIONAL HISTORIC SITE

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TABLE 4: SUMMARY OF IMPACTS

|                                          | Preferred Alternative                                                                                                                                                                                                                                                    | Alternative 1:<br>No Action                                                                   | Alternative 2:<br>Modern Uses of Existing<br>Historic Structures                                                                                                                                                                                                  | Alternative 3:<br>Restore Existing Historic<br>Structures                                                                                                                                                                                                                | Alternative 4: Reconstruct<br>Key Historic Structures and<br>Restore Existing Historic<br>Structures                                                                                                                                                                     |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Natural Resources</b>                 |                                                                                                                                                                                                                                                                          |                                                                                               |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                          |
| <b>Topography</b>                        | Moderate effect<br>Surface elevation at new visitor center slightly elevated; some local flood protection diking                                                                                                                                                         | No new impacts<br>Unchanged                                                                   | Minimal effect<br>Unchanged                                                                                                                                                                                                                                       | Moderate effect<br>Surface elevation at new visitor center slightly elevated; some local flood protection diking                                                                                                                                                         | Moderate effect<br>Surface elevation at new visitor center slightly elevated; some local flood protection diking                                                                                                                                                         |
| <b>Floodplains and Wetlands</b>          | Historic buildings and lands within 100- and 500-year floodplains; no new impacts to wetlands                                                                                                                                                                            | Historic buildings and lands within 100- and 500-year floodplains; no new impacts to wetlands | Historic buildings and lands within 100- and 500-year floodplains; no new impacts to wetlands                                                                                                                                                                     | Historic buildings and lands within 100- and 500-year floodplains; no new impacts to wetlands                                                                                                                                                                            | Gain of 3,420 sf of riverine wetland due to restoration                                                                                                                                                                                                                  |
| <b>Soils/Prime and Unique Farmlands</b>  | <ul style="list-style-type: none"> <li>• Temporary compaction of 265,500 sf of soil; permanent compaction and displacement of 135,250 sf of soil by impervious structures</li> <li>• Restoration of previously compacted soils exceeds compaction by 9,850 sf</li> </ul> | Unchanged                                                                                     | Temporary compaction of 7,260 sf of soil; permanent compaction of 2,670 sf of soil                                                                                                                                                                                | <ul style="list-style-type: none"> <li>• Temporary compaction of 211,845 sf of soil; permanent compaction and displacement of 94,650 sf of soil by impervious structures</li> <li>• Restoration of previously compacted soils exceeds compaction by 88,150 sf</li> </ul> | <ul style="list-style-type: none"> <li>• Temporary compaction of 265,500 sf of soil; permanent compaction and displacement of 135,250 sf of soil by impervious structures</li> <li>• Restoration of previously compacted soils exceeds compaction by 9,850 sf</li> </ul> |
| <b>Vegetation</b>                        | <ul style="list-style-type: none"> <li>• Temporary and permanent displacement of previously disturbed and undisturbed vegetation</li> <li>• Restoration of vegetation exceeds displacement</li> </ul>                                                                    | No impacts                                                                                    | <ul style="list-style-type: none"> <li>• Temporary and permanent displacement of previously disturbed and undisturbed vegetation</li> <li>• Restoration of prairie vegetation exceeds displacement</li> <li>• Tree planting increases woodland acreage</li> </ul> | <ul style="list-style-type: none"> <li>• Temporary and permanent displacement of previously disturbed and undisturbed vegetation</li> <li>• Restoration of vegetation exceeds displacement</li> </ul>                                                                    | <ul style="list-style-type: none"> <li>• Temporary and permanent displacement of previously disturbed and undisturbed vegetation</li> <li>• Restoration of vegetation exceeds displacement</li> </ul>                                                                    |
| <b>Wildlife</b>                          | Restored prairie and woodland will enhance habitat for wildlife                                                                                                                                                                                                          | No new impacts                                                                                | Restored prairie and woodland will enhance habitat for small mammals and insects                                                                                                                                                                                  | Restored prairie and woodland will enhance habitat for wildlife                                                                                                                                                                                                          | Restored prairie and woodland will enhance habitat for wildlife                                                                                                                                                                                                          |
| <b>Threatened and Endangered Species</b> | No probable impact                                                                                                                                                                                                                                                       | No new impacts                                                                                | No probable impact                                                                                                                                                                                                                                                | No probable impact                                                                                                                                                                                                                                                       | No probable impact                                                                                                                                                                                                                                                       |
| <b>Air/Water Quality</b>                 | No long-term negative effects on air quality; short-term dust from construction; no impact on surface and ground water; drinking water quality improved                                                                                                                  | Both unchanged                                                                                | No long-term negative effects on air quality; short-term dust from construction; no impact on surface and ground water; drinking water quality improved                                                                                                           | No long-term negative effects on air quality; short-term dust from construction; no impact on surface and ground water; drinking water quality improved                                                                                                                  | No long-term negative effects on air quality; short-term dust from construction; no impact on surface and ground water; drinking water quality improved                                                                                                                  |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cultural Resources    | Preferred Alternative                                                                                                                                                                                                                                                                                                                                                                                              | Alternative 1:<br>No Action                                                                                                                                                                                                        | Alternative 2:<br>Modern Uses of Existing<br>Historic Structures                                                                                                                                                                                                                                                                                                                       | Alternative 3:<br>Restore Existing Historic<br>Structures                                                                                                                                                                                                                                                                                                                              | Alternative 4: Reconstruct<br>Key Historic Structures and<br>Restore Existing Historic<br>Structures                                                                                                                                                                                                                                                                                                            |
|                       | <ul style="list-style-type: none"> <li>• All on-site modern visual intrusions removed</li> <li>• All historic structures restored to the historic period</li> <li>• Impacts to archeological sites mitigated through a data recovery program</li> </ul>                                                                                                                                                            | <ul style="list-style-type: none"> <li>• No new negative impacts</li> <li>• Modern intrusions not removed</li> <li>• Visitor center and headquarters remain overcrowded</li> <li>• Historic buildings remain unrestored</li> </ul> | <ul style="list-style-type: none"> <li>• Some modern visual intrusions remain</li> <li>• Some historic structures restored</li> <li>• Accessibility measures impact historic building appearance</li> <li>• HS-9 not available for interpretation</li> <li>• Some visitor center and headquarters crowding relieved</li> </ul>                                                         | <ul style="list-style-type: none"> <li>• All on-site modern visual intrusions removed</li> <li>• All historic structures restored to the historic period</li> <li>• Impacts to archeological sites mitigated through a data recovery program</li> </ul>                                                                                                                                | <ul style="list-style-type: none"> <li>• All on-site modern visual intrusions removed</li> <li>• All historic structures restored to the historic period</li> <li>• Impacts to archeological sites mitigated through a data recovery program</li> </ul>                                                                                                                                                         |
| Visitor Use           | <ul style="list-style-type: none"> <li>• Annual visitation increases and visitor experience improves due to new facilities, expanded interpretation, enhanced safety and accessibility</li> <li>• Visitor length of stay would increase</li> <li>• Fee collection system improved</li> </ul>                                                                                                                       | <ul style="list-style-type: none"> <li>• Visitor circulation, fee collection remain inadequate</li> <li>• Staff ability to provide visitor services limited by increased visitation</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Visitor circulation, fee collection remain inadequate</li> <li>• Visitor access and experience improved</li> <li>• Staff ability to provide visitor services limited by expanded themes, increased visitation</li> </ul>                                                                                                                      | <ul style="list-style-type: none"> <li>• Annual visitation increases and visitor experience improves due to new facilities, expanded interpretation, enhanced safety and accessibility</li> <li>• Visitor length of stay would increase</li> <li>• Fee collection system improved</li> </ul>                                                                                           | <ul style="list-style-type: none"> <li>• Annual visitation increases and visitor experience improves due to new facilities, expanded interpretation, enhanced safety and accessibility</li> <li>• Visitor length of stay would increase over alternative 3</li> <li>• Fee collection system improved</li> </ul>                                                                                                 |
| Socioeconomic Impacts | <ul style="list-style-type: none"> <li>• Expanded interpretation broadens public appeal, increased park visitation and revenue; increased sales to Larned</li> <li>• Short-term economic benefits from park construction projects</li> <li>• Increased personnel, maintenance, operations costs over alternatives 2 &amp; 3</li> <li>• Creates new jobs; adds to local tax base and retail sales volume</li> </ul> | No direct beneficial impacts                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Expanded interpretation broadens public appeal, increased park visitation and revenue; increased sales to Larned</li> <li>• Short-term economic benefits from park construction projects</li> <li>• Creates new jobs; adds to local tax base and retail sales volume</li> <li>• Increases personnel, maintenance, operations costs</li> </ul> | <ul style="list-style-type: none"> <li>• Expanded interpretation broadens public appeal, increased park visitation and revenue; increased sales to Larned</li> <li>• Short-term economic benefits from park construction projects</li> <li>• Increased personnel, maintenance, operations costs</li> <li>• Creates new jobs; adds to local tax base and retail sales volume</li> </ul> | <ul style="list-style-type: none"> <li>• Expanded interpretation broadens public appeal, increased park visitation and revenue; increased sales to Larned</li> <li>• Short-term economic benefits from park construction projects</li> <li>• Increased personnel, maintenance, operations costs over alternative 2 and 3</li> <li>• Creates new jobs; adds to local tax base and retail sales volume</li> </ul> |

## **THE AFFECTED ENVIRONMENT**

### **NATURAL RESOURCES**

#### **Physical Setting**

Fort Larned National Historic Site is located in Pawnee County in south central Kansas approximately 125 miles northwest of Wichita and approximately 60 miles south of Hayes. Larned, the county seat, is approximately 6 miles east of the site. Kansas Highway 156 is the principal means of public access.

The enabling legislation for Fort Larned limits the park to a total of 750 acres. Current park acreage totals 718.39 acres. Of that, 410.46 acres are owned in fee by the federal government, including the 44-acre detached Santa Fe Trail ruts area. The state of Kansas owns about 38.73 acres within the park boundary, most of which is right-of-way for U.S. 156. The remaining 269.2 acres are privately owned, but the federal government has visual easements on that acreage.

The 718.39-acre national historic site contains two units: (1) the historic fort, on the banks of the Pawnee River about eight miles above its confluence with the Arkansas River and (2) the smaller (44.4 acres) Santa Fe Trail ruts area located approximately six miles south of the fort.

The park is slightly more than 2,000 feet above sea level, and the land is nearly flat. The major natural features consist of the river, streamside woodlands, an old oxbow of the river, and prairie remnants. Total relief (range of elevation difference) is less than ten feet, except at the streambanks. The Santa Fe Trail ruts area is located in gently rolling upland at about 2,100 feet elevation. Total relief there is approximately 30 feet.

The major natural forces are from phenomena such as floods and severe storms, including tornadoes. These threats are common in this region. Existing buildings have incurred major damage from high winds (which may have been tornadoes) at least three times since the 1880s. Given the frequency, severity, and erratic nature of tornadoes on the Great Plains, they must be considered a threat to cultural resources. There is no way to fully protect historic structures, records, and artifacts on site, but underground storage may offer the best protection for original or irreplaceable artifacts and records. Duplicate copies of records, stored in separate locations, are also advisable.

The entire historic core area of the fort and nearly all of the park's other lands are within the 100-year floodplain of the Pawnee River. The fort and facilities were purposely built in this location for logistic and strategic reasons; therefore, any other setting for the fort would not be historically correct.

#### **Floodplains**

The National Flood Insurance Program has not surveyed the lands within the federally owned national historic site, but in 1971 all lands adjacent to the principal unit of Fort Larned National

Historic Site were identified as being within the 100-year floodplain. The Santa Fe Trail ruts area is outside the floodplain.

The floodplain along the Pawnee River drainage has been modified since the early 20th century. Portions of the riverbank have been diked, altering and channeling stream flow. In the 1920s a concrete dam was constructed approximately .25 mile downstream from the historic site. The dam resulted in a periodic water impoundment extending as far as 6 miles upstream and has caused sedimentation of the streambed to depths of 12 to 14 feet, raising the water surface during times of flow. Upstream irrigation diversions, livestock ponds, and flood control projects constructed in the mid seventies have also altered the Pawnee River floodplain. These drainage modifications have caused an unknown change in the extent of the floodplain and its probable impact on Fort Larned National Historic Site.

The National Flood Insurance program is in the process of redelineating the Pawnee River floodplain. The National Park Service Water Resources Division has analyzed the hydrology of the Pawnee River (see appendix A).

### **Wetlands**

No known wetlands exist within the Santa Fe Trail ruts area. The U.S. Fish and Wildlife Service has identified wetlands along the Pawnee River within the main unit of Fort Larned National Historic Site. The National Wetlands Inventory lists flooded, intermittent, riverine wetland within the streambed of the Pawnee River. Within the high water zone, located near the northeast corner of the historic site, is a small area of temporarily flooded, shrub-scrub palustrine wetland. In addition, near the west boundary of the historic site and within the Pawnee River high water zone, there is a temporarily flooded, forested palustrine wetland.

A diked and impounded oxbow to the east of the fort, once used as a reservoir for irrigation and as a stock pond, was pumped full of water from the Pawnee River until 1974. This dry oxbow area is identified as a unconsolidated shore and temporary flooded palustrine wetland.

### **Soils**

The main unit is dominated by nearly level Bridgeport silt loam soils on the low terraces of the Pawnee River. New Cambria silty clay loam, Hord silt loam, and Uly silt loam comprise the remaining soils of the historic site.

The Santa Fe Trail ruts area is comprised primarily of upland soils of Harney silt loam of 0% to 1% slope. The remainder consists of Harney silt loam of 1% to 3% slope and Harney-Uly silt loam complex of eroded 3% to 6% slopes.

### **Prime and Unique Farmlands**

All the soils in Fort Larned National Historic Site have been identified by the Soil Conservation Service as prime farmland.

## Climate

The climate of the area is classified as typical interior continental type with daily and annual variations in temperature and precipitation, cold winters, warm summers, and a long growing season. Spring and fall are usually short.

The annual average temperature is 56°F, with a summer average of 78° and a winter average of 34°. Extreme temperatures of 114° and -24° have been recorded. Summer maximum temperatures are usually about 94°F and winter minimum temperatures average 22°F.

Precipitation fluctuates both seasonally and annually. Annual precipitation averages about 24 inches, with 75% of that amount falling during the growing season from April through September.

Wind is common, and there are only a few calm days each year. Average wind speed is 14 miles per hour, but velocities of 20 mph and above are common throughout the year. Intense spring and summer thunderstorms with severe winds and tornadoes do occur in the area.

## Vegetation

Historically, Fort Larned consisted of two vegetation community types — prairie grasslands and streamside woodlands.

The original prairie plant community was primarily a two-layer structure of bluestem-grama grasses. Species were probably big bluestem, little bluestem, sideoats grama, western wheatgrass, western ragweed, lead plant, red three-awn, buffalo grass, Junegrass, blazing star, butterfly milkweed, and others.

Original woodlands were limited to streambanks because of the dry prairie soils. The post surgeon described the woodland belt as well populated with elm and boxelder.

The vegetation communities of today bear little resemblance to the vegetation of the historic period. With the exception of the trail ruts detached area, the native prairie has long since been broken up and cultivated while the native woodlands were felled for firewood for the fort.

In 1878 the lands were sold to private ranching interests. With the exception of the riverbanks, the trail ruts area, and the immediate fort area, most lands were gradually converted to cultivated cropland until acquisition by the federal government in 1964. Extensive land leveling was done in 1956 to facilitate irrigation. These actions greatly altered the natural vegetation communities and established a predominantly nonnative species community.

In order to re-create the historical prairie, a reclamation program was initiated in 1969. Blue grama and buffalo grass were planted along with switchgrass, big and little bluestem, western wheatgrass, side oats grama, Indian grass, and others. At present, prairie vegetation restoration is partially completed. Weedy grasses and forbs still dominate some portions of the historic site and several areas are colonized by noxious weeds or undesirable nonnative plants such as field bindweed, *Kochia*, bermuda grass, smooth brome, puncture vine, sour dock, foxtail, dandelion, and others.

The present riparian woodland species composition differs from historical times because of agricultural use of the land and introduction of nonnative species. The woodland community now includes eastern red cedar, cottonwood, poison ivy, tamarisk, green ash, willow baccharis, hackberry, willows, pines, and others.

## **Wildlife**

Bison, pronghorn, and gray wolves were historically recorded at Fort Larned, but are no longer in the area. White-tailed and mule deer are the only large wild mammals frequenting the area.

Smaller mammals such as coyote, bobcat, badger, raccoon, opossum, big brown bat, striped skunk, black-tailed jackrabbit, eastern cottontail, and fox squirrel, thirteen-lined ground squirrel and various other rodent species live at Fort Larned or in the immediate area. The black-tailed prairie dog inhabits the Santa Fe Trail ruts area.

No extensive bird survey has been completed at Fort Larned, but identified avian species include numerous species of waterfowl, shorebirds, raptors, and songbirds. Migrant species are plentiful and varied and include Canada geese, sandhill cranes, and green-winged teals. Resident species include blue jays, American crows, ring-necked pheasants, turkeys, black-billed magpies, white-crowned and house sparrows, black-capped chickadees, great horned owls and others. Seasonal residents include American kestrels, Swainson's hawks, northern orioles, burrowing owls, brown thrashers, red-headed woodpeckers, American robins, mourning doves, common nighthawks, blackbirds, lark sparrows, western meadowlarks, and others.

No survey or species list for either amphibians or reptiles is available for the Fort Larned area. Amphibian species known to inhabit similar areas and habitats in Pawnee County are plains spadefoot, great plains spadefoot, and plains leopard frog. Reptile species known to exist in the county are ornate box turtle, snapping turtle, prairie-lined racerunner, western hognose snake, eastern yellowbelly racer, bullsnake, prairie kingsnake, and northern water snake. Bull snakes are commonly seen in and around the historic buildings. The site is in the known range of two pit vipers, the prairie rattlesnake and the massasauga, but neither species has been identified in the immediate area.

At Fort Larned aquatic habitats are ephemeral. The Pawnee River contains sufficient water to support fish only during the spring and early summer. Although no survey has been conducted for fish species, red and sand shiners, fathead and bullhead minnows, carp, black bullhead, and channel catfish have been identified in Pawnee County. Large mussels are another aquatic species typically found in the heavily silted Pawnee River habitat.

## **Threatened and Endangered Species**

No threatened or endangered animal or plant species are known to be present at Fort Larned. Six federally listed endangered or threatened species of birds have been documented in appropriate habitat within Pawnee County.

The endangered bald eagle (*Haliaeetus leucocephalus*) is an occasional winter visitor to Pawnee County. Fort Larned provides no suitable habitat for the bald eagle, as wintering eagles are dependent upon large bodies of water for feeding on fish and waterfowl.

The endangered eskimo curlew (*Numenius borealis*) has not been recorded in Kansas since 1902. During spring migration the eskimo curlew feeds in plowed fields, heavily grazed pastures, burned grasslands, and prairie dog towns.

The endangered least tern (*Sterna antillarum*) may migrate through Pawnee County.

The endangered peregrine falcon (*Falco peregrinus*) has also been recorded in Pawnee County as a migrant and occasional winter visitor. Fort Larned has no choice habitat as the falcon prefers marshes, lakes, and rivers where waterfowl and shorebirds provide an ample prey base.

The endangered whooping crane (*Grus americana*) is known to occasionally migrate through Pawnee County. It is unlikely to use Fort Larned habitat as it prefers marshes and fields to rest and feed on invertebrates. Quivera National Wildlife Refuge, approximately 35 miles east of Fort Larned, has been designated as critical habitat for the whooping crane.

The threatened piping plover (*Charadrius melodus*) may be a rare migrant in Pawnee County. Piping plovers are unlikely to be seen at Fort Larned because they prefer sparsely vegetated shorelines of shallow lakes, salt flats, open ground marshes, and bare river sandbars.

An additional five animal species are listed as threatened by the Kansas Department of Wildlife and Parks and the Natural Heritage Program. The eastern spotted skunk (*Spilogale putorius interrupta*), eastern hognose snake (*Heterodon platirhinos*), Kansas glossy snake (*Arizona elegans*), snowy plover (*Charadrius alexandrinus*), and white-faced ibis (*Plegadis chihi*) are known to have once existed in Pawnee County.

## Air Quality

Air quality for Fort Larned National Historic Site and Pawnee County is thought to be good, but site monitoring locations or data for the general area could not be located.

## Water Quality and Resources

The Pawnee River has a surface channel capacity of 4,000 cubic feet per second (cfs). Available records indicate extreme flows vary from flood stage (16,300 cfs) to no recordable flow. In the past few years the Pawnee River at Fort Larned has generally flowed on an ephemeral basis, and mostly during the spring and early summer. The river water generally has numerous dissolved minerals and carries a heavy silt load.

A concrete dam downstream from the boundary impounds water within the channel, but generally dries in early summer. The riverbed is dry for the majority of the year.

Ground water quality is considered poor for human consumption because of excessive amounts of manganese. Three wells within Fort Larned currently supply water for all uses, including drinking and fire suppression. Drinking water is further degraded by stained and corroded pipes.

## **CULTURAL RESOURCES**

### **Historic Background**

Fort Larned was established by the U.S. Army in 1859 as Camp on the Pawnee Fork, and was renamed Camp Alert the following year. In 1860 the Army relocated the fort to its present site three miles west of the original location and renamed it in honor of the paymaster general, Colonel Benjamin F. Larned.

The post was established as a result of Indian hostility to the increasing traffic on the Santa Fe Trail. The fort's mission was to protect the Kansas portion of the trail and, in concert with Fort Lyon in Colorado and Fort Union in New Mexico, it was a principal element in a system of posts and patrols intended to ensure the safety of travel, commerce, and the mails.

For more than a decade Fort Larned served as a base of operations against the Indians on the Central Plains, specifically the Cheyenne, Kiowa, Arapaho, and Comanche tribes. From 1861 to 1868 the fort was the focus of a program of peaceful conquest, acting as the Bureau of Indian Affairs distribution point for annuities granted to tribes that had signed the Fort Wise Treaty of 1861. In 1864 Fort Larned became the agency for the Kiowa and Comanche tribes and the following year for the Cheyennes, Arapahos, and the Kiowa-Apaches. The agency was abolished in 1868 when the tribes were moved to reservations in Oklahoma. The fort became a scene of significant cultural diversity with the daily interaction of Anglo-Americans, African-Americans, Mexican-Americans, and American Indians.

During the 1870s troops from the post provided protection for the construction of the Atchison, Topeka, and Santa Fe Railroad. After completion of the line through Kansas in 1872, the fort provided police service in the area until 1878, when the fort was abandoned. A guard detachment from Fort Dodge protected the property until 1883 when the Fort Larned military reservation was declared surplus and its custody transferred to the General Land Office, Department of the Interior.

Fort Larned underwent a major construction program in 1867 and 1868. Although only nine of the historic structures survive, they are among the most important. They comprise all but one of the original ten stone structures that defined the parade ground quadrangle and are good examples of American military post architecture during the Victorian period. The remains of virtually all other structures built by the Army survive today as archeological features. These archeological remains also represent facets of the fort's history and contribute to its significance as a historic resource.

Fort Larned was sold at auction by the General Land Office in 1884 and had several owners over time, most of whom used the site as headquarters for agricultural operations. The fort site, including the buildings, was purchased by E.E. Frizell in 1902 and was owned by his family until the national historic site was established in 1964. During the Frizell ownership the

surviving structures were extensive altered and used as the headquarters complex for a major ranching operation.

The National Park Service studied Fort Larned, found it to be nationally significant, and designated it as a national historic landmark in 1961. On August 31, 1964, the president signed Public Law 88-541, authorizing the establishment of Fort Larned National Historic Site. The Historic American Buildings Survey recorded the nine surviving structures in 1965.

Fort Larned is significant not only because of the role it played in the nation's history, but also because it still has structures dating from the historic period. The nine structures comprising the historic core of the site are an important resource and were the reason the park was established. Fort Larned is listed on the National Register of Historic Places and is therefore afforded the procedural protection of section 106 of the National Historic Preservation Act (80 Stat. 915). In addition, compliance with 36 CFR 800, Executive Order 11593, and the Antiquities Act of 1906 is also required.

### **Historic Appearance**

When Camp Alert was moved in 1860, it was reestablished on the south bank of the Pawnee River and renamed Fort Larned. The Army initiated a construction program in an area measuring about 800 feet by 1,180 feet. During its military history Fort Larned has consisted of at least 50 structures, some of which were temporary.

The earliest structures were primitive. In 1860 troops erected seven structures of consequence — an adobe quartermaster storehouse and an adobe commissary storehouse (immediately north of the site of the present stone barracks); a partitioned officers' quarters of adobe and wooden posts called "pickets" (immediately south of the site of the present stone quartermaster storehouse); a picket guardhouse (on the eastern fringe of the post, next to the dry oxbow); two adobe laundresses' quarters (immediately north of the two storehouses near the river); and an adobe hospital (near the angle formed by the junction of the river and the oxbow). The troops also built primitive structures. Their quarters and the post bakery were dugouts along the riverbank. A small adobe meat house, a log and canvas carriage house, and a three-room picket shop building were built along the river northwest of the present officers' quarters. The development was then supplemented with miscellaneous tents and hovels that constituted Fort Larned's physical plant during its early years. These early structures were better suited to the arid southwest than to Kansas, particularly since most of them were roofed with earth-covered brush. Although they rapidly deteriorated, they established the basic character of the fort.

Fort Larned was improved when officials recognized its physical dilapidation and its tactical value. The first improvement was a stone blockhouse (southeast of the southeast corner of the present parade ground), constructed in 1864-65. At about the same time a line of field trenches was dug across the southern flank of the post from the river to the dry oxbow. Such traditional fortifications were a short-lived curiosity most evident in military forts of that time in Kansas. The trenches reflected the experience of officers during the Civil War, a conflict between armed forces capable of assaulting strong points. The Plains Indians, however, were insufficiently motivated and equipped (and too few in number) to engage in such assaults, and they rarely attacked military posts. Fort Larned and other forts of its time were quarters and

storage facilities, rather than true forts, and they established patterns of site planning still followed in American military posts.

Despite debate over whether to move the fort again, plans were initiated in 1866 for an improvement to the post's physical plant. During the summer and fall the troops constructed a stone commissary storehouse (the easternmost of two structures now on the south side of the parade ground) that was completed and subjected to alterations the next year. Its walls were originally raised to a height of about four feet, and at that level a series of rifle ports were built in as the walls were raised to their full height. This fortification effort supported General William Hancock's decision to abandon and fill in the entrenchments, which were difficult to maintain and so long that more than 1,000 soldiers would have been required to man them in the event of a serious attack.

During 1867 and early 1868 a civilian work force (averaging 191 men) under the supervision of an Army quartermaster undertook a comprehensive construction program that was to provide six frame buildings, nine stone buildings, alterations to two existing stone structures, the blockhouse, and the commissary storehouse. After a reduction of funds in early 1868, only a minor amount of work — including the addition of kitchen wings to the two barracks, completion of the new commissary, and the addition of porches to the officers' quarters — had to be completed by enlisted men under the supervision of a second lieutenant. One stone structure originally proposed, a new guardhouse, never progressed beyond its foundation.

In 1869 the cavalry stables (located south of the present commissary and quartermaster storehouses) burned to the ground. At about the same time an extensive cleanup program was undertaken to remove construction debris and the remains of the surplus original structures from the fort.

From the end of 1869 until the close of its military occupation, Fort Larned's appearance remained much the same. It included ten structures around the parade ground (the existing nine structures of stone plus the frame adjutant's office at the northwest corner), together with the foundations of the uncompleted guardhouse on the east side of the parade ground; the blockhouse (converted to a guardhouse); the two laundresses' quarters and the hospital north of the barracks; a hospital steward's quarters near the northeast corner of the east barracks hospital; a washhouse near the northwest corner of the west barracks; an icehouse next to the river west of the commanding officer's quarters; the sutler's corral and stables next to the river south of the icehouse, with three sutler's buildings south of them; and the new sutler's store about 100 yards south of the quartermaster storehouse. The original cemetery was moved in 1869 from the island within the oxbow to a site north of the post on the opposite side of the river. The oxbow island was used for storage of wood, hay, and materials. A scattering of corrals, teamsters' quarters, miscellaneous structures, and a dump completed the scene.

After its abandonment Fort Larned gradually deteriorated — aided by the scavenging of materials from the structures. For the next eighty years, it became a ranchstead. New structures, including silos and corrals, were added, and all but the nine surviving stone structures around the parade ground were demolished. The nine surviving stone structures were altered as necessary for utilitarian purposes. The two barracks buildings became a single large barn covered with an enormous gambrel roof. Fences, shade trees, and decorative vegetation were added. By 1960 the ranch evinced stylish and comfortable prosperity in a unique layout provided by the Army's site planning and architecture.

Since the late 1960s a program has been underway to restore the military appearance of Fort Larned. During the 1960s most modern ranch structures were demolished and the detritus of the ranching period removed. Today, only the nine stone structures built by the Army remain.

## **Existing Historic Structures**

Nine historic structures, all built of stone and all but one constructed during the 1867-1868 construction program, survive from the period of Army occupancy at Fort Larned. They are described below in the order of the historic structure (HS) numbers assigned by the National Park Service. The sequence is clockwise around the parade ground, beginning at the northwest corner.

**HS-1, Barracks.** This T-shaped building was constructed in 1867-1868, and the kitchen wing was added in 1868. The main structure measures 150 feet by 43 feet. The kitchen wing measures 36 feet by 34 feet and projects from the center of the north (rear) facade. The structure had coursed rubble stone masonry walls and a gabled roof. A rubble stone masonry partition, without openings, divided it into eastern and western halves. The partition was continued without openings in the kitchen wing. The structure provided two separate company quarters under the same roof.

During civilian occupancy the structure was converted to use as a barn. In 1921 barracks HS-1 and HS-2 were converted into a single barn. The walls were raised (in salvaged stone) about five feet, the gables removed, and a large gambrel roof (reputedly the largest in Kansas, and possibly one of the largest in the country) was constructed, partially from materials salvaged from the original roofs. In 1973-1974 restoration of the exterior of barracks HS-1 to its military appearance was accomplished. Modern interior restoration of this structure was completed in February 1977, permitting the structure to be used for offices, audiovisual interpretation, museum exhibits, and public restrooms.

**HS-2, Barracks.** This T-shaped building is the easternmost of the two structures on the north side of the parade ground. It was constructed in 1867-1868 and the kitchen wing was added in 1868; barracks HS-2 and HS-1 are nearly identical. The western wing of barracks HS-2 is restored as an infantry barracks of the historic period. The larger eastern wing was intended for the one company of cavalry stationed at the post from April 1867 to January 1869, but in 1871 that wing was converted to use as a hospital. The east wing barracks room was partitioned into two wards, and counters, shelving, and other medical storage facilities were installed in the various rooms.

Other construction details, interior and exterior finish, alterations, and subsequent exterior restoration are the same as for barracks HS-1.

**HS-3, Shops Building.** This rectangular building is the northernmost of the two structures on the east side of the parade ground. It was constructed in 1867-1868. It measures 84 feet by 30 feet and has walls of coursed rubble stone masonry, gable-roofed at the ends. Because of a great number of post-military alterations, it has been difficult to identify all aspects of the structure's military appearance. On the basis of historical, archeological, and architectural research, the building apparently fronted to the east, away from the parade ground. There was a brick and stone chimney at each end of the structure and one at the partition between the

center two shops. Other interior details have been more difficult to determine. It is known that there were four rooms separated by framed partitions. Beginning at the north end, there was a two-room bakery with one oven; a saddler's, carpentry, and wheelwright shop; and a blacksmith shop. All but the blacksmith shop evidently had wood floors.

During civilian occupation the structure was connected to the new commissary HS-4 by a long metal shed, and the roof was covered in metal. In the 1930s the former bakery was converted to a storage space and the remainder to machine shop and storage. In the 1950s a blacksmith shop was opened in the former blacksmith room for interpretive purposes. In 1979, the National Park Service restored the exterior and interior of the building and furnishings were added.

**HS-4, New Commissary Storehouse.** This rectangular building is the southernmost of the two structures on the east end of the parade ground. It was constructed during 1867-1868. It measures 84 feet by 31 feet and has walls of coursed rubble stone masonry, gable-roofed at the ends. There was one stone and one brick chimney, one at the north end and another about 20 feet from the south end, as determined from historic photographs. The remainder of the interior was a storeroom without a ceiling. The structure was intended for additional commissary storage. During the 1870s the north end of the building, which had been an office, was converted for use as the post school.

During civilian occupation, in the first two decades of the 20th century, the structure was gutted, provided with a new metal roof, and joined to shops building HS-3 by a long shed. Once a ranch machine shop, during the 1950s the interior was used to house visiting youth groups. A single wooden door with stone stoop was cut into the west elevation at the south end, and men's and women's restrooms were installed. The remainder of the structure was converted to use as the park maintenance shop. The metal roofing was replaced with wood shingles in 1968 following accidental destruction of the roof. Today the north end of the structure has been restored as the post school and the historic storeroom area houses the park curation facilities.

**HS-5, Old Commissary Storehouse.** This rectangular building is the easternmost of the two structures on the south side of the parade ground. It was constructed in 1866, measures 154 feet by 27 feet and has walls of coursed rubble stone masonry, gable-roofed at the ends. There is a row of rifle ports in the west and south walls. There are two stone chimneys. Interior finish probably included shelving and bins and two or more frame partitions. In the first two decades of the 20th century, civilian owners converted the building to a stable with the windows on the north elevation converted to stall doors. The north wall was connected to the north wall of the quartermaster storehouse HS-6 with stone masonry and the connecting space roofed with metal roofing on a wood frame, affording a garage open to the south. The roof of the structure was at some time replaced with metal roofing. Stalls were constructed in the interior. The building exterior has been restored to its historic appearance. The pumproom and tank for the park's water system are in the east end of the structure.

**HS-6, Quartermaster Storehouse.** This rectangular building is the westernmost of the two structures on the south side of the parade ground. It was constructed in 1867 and measures 158 feet by 40 feet. There is a row of rifle ports at about the four-foot elevation of the south wall. Inside, a frame partition ran across the structure about 30 feet from the west end, and the intervening space was bisected by another frame partition from that to the west end just

north of the door. The northwest room was further subdivided into an office and another room (possibly quarters), while the southwest room was an issuing room with access to the remainder of the structure (the storeroom) through a door in the partition. The north wall was connected to the north wall of old commissary HS-5 with stone masonry and the connecting space roofed with metal roofing on a wood frame, affording a garage open to the south. The interior was altered to provide a barn with stalls and storage facilities, removing part of the evidence of original partitions. In 1913 a loft was added to the building. The building exterior has been restored to its historic appearance. It is now used for storage, interpretation, special events, and display of a Conestoga wagon on loan from Bent's Old Fort.

**HS-7, Officers' Quarters.** This U-shaped building is the southernmost of the three structures on the west side of the parade ground. It was constructed during 1867-1868 and measures 84 feet by 54 feet overall, with walls of coursed rubble stone masonry. The structure was a duplex, bisected by a continuous 34-foot-long stone partition running east-west at the center. The main portion of each half included four rooms divided by frame partitions, separated in pairs by a central hallway seven feet wide. The outer pair of rooms in each half were two-room apartments for captains. The interior pair of rooms in each half were one-room apartments for lieutenants and each opened onto the hallway. Each hallway ran between a front door and a rear door and each kitchen wing. There were two rooms in each kitchen wing, a servant's room, and a kitchen opening onto the porch. There was a cellar underneath each kitchen wing, accessible by both interior and exterior stairs. In 1869 each cellar was deepened and converted to a kitchen, with the former kitchen converted to a dining area. A porch ran the length of the structure on the front, supported by square wood columns with balustered rails and wooden brackets. There were three brick chimneys on the main structure and one on each kitchen wing. In 1869-1870 one or two four-room frame additions were provided to give each pair of lieutenants a kitchen, dining room, and servant's quarters.

This structure has remained remarkably unaltered over the years and generally preserves its historic features. Used as a residence after the military left, outbuildings were moved, modern utilities installed, and a bathroom added. The building has recently been restored. The concrete platform that replaced the original front porch was removed and a wooden porch reconstructed. Outbuildings (privy, fences, and well) have also been reconstructed.

**HS-8, Commanding Officer's Quarters.** This L-shaped building is the center of the three structures on the west side of the parade ground. It was built in 1867 and measures 47 feet by 63 feet, and is constructed of finely dressed ashlar stone masonry on the rear (west) side. The north wall was restored in 1972. There are three brick chimneys, one at each end of the main structure, and one at the rear (west) end of the kitchen wing. There is a porch in the middle of the front elevation. The interior of the main portion was divided into four equal rooms separated in pairs by a central hallway running between the front and back doors. The kitchen wing had only one kitchen room with pantry closet. The only second-story room at the fort, a servant's quarters, was immediately above the kitchen.

From the 1880s until the fort's acquisition by the NPS the structure was extensively altered but remained a residence. All outbuildings and appurtenances were removed in the early 20th century, although the well and privy liners (stone) remain and are covered. In 1979, foundation and wall repairs were made to the north side and, in 1984, farm period additions on the south and west sides were removed. Other exterior restorations were completed in 1983, 1985, and 1986.

**HS-9, Officers' Quarters.** This U-shaped building, nearly identical to officer's quarters HS-7, is the northernmost of the three structures on the west side of the parade ground. It was built in 1867-1868; one or two kitchen additions were added in 1869 -1870 (as for officer's quarters HS-7). While its alterations in the 20th century include two bathrooms (one on each kitchen wing porch) as opposed to the single unit added to officer's quarters HS-7, the interior and trim of officer's quarters HS-9 appear to retain a greater proportion of original historic fabric than any other structure in the fort. All original appurtenances and outbuildings were removed in the early 20th century, although the stone well liner remains and is covered. Outbuildings have been reconstructed.

### **Historic Structures No Longer Existing and Other Historic Structures and Features**

During the military occupation the construction, demolition, or abandonment of a wide variety of structures, most of them buildings but including the parade ground, gardens, dumps, and a drainage system, took place at Fort Larned.

The most recognizable of these structures was the blockhouse HS-10. This was located about 100 feet southeast of the south end of the new commissary HS-4, towards the curve of the dry oxbow. It was constructed in 1864-1865. Its six walls were of coursed rubble stone masonry with two rows of rifle ports all the way around, one about 3 to 4 feet from the ground and the other about 2 feet from the top of the 12-foot walls. A wood-walled tunnel ran from the interior of the structure 16 feet northwest to a covered well. The structure was whitewashed after 1871. Interior details are unknown, since the structure was demolished before the turn of the century. The structure was originally intended for use as a blockhouse, but the need for such a defense never arose. During the first few years of its life it was used for storage of supplies. In 1867 it had been converted to a guardhouse, with prisoners housed in the interior.

Archeological investigation in 1974 revealed the existence of the ground plan, the tunnel, and the well, together with some debris. The excavation was backfilled and the site marked on the surface until 1988 when, at the direction of Congress, the blockhouse was reconstructed.

### **Santa Fe Trail Ruts Area**

The 44.44-acre area is located approximately 6 miles southwest of Fort Larned. It preserves wagon ruts caused over the Santa Fe Trail. Never plowed, it was kept intact as a small pasture surrounded by croplands by its previous owner until its acquisition by the federal government after the establishment of the national historic site. The gently rolling terrain is broken by the longitudinal depressions of the trail ruts and by the remains of a few buffalo wallows. The vegetative cover is a remnant of original prairie vegetation, altered due to long-term grazing. A raised platform, near the center of the south end, provides an elevated view of the area.

## **VISITOR USE DATA**

### **Visitor Use Statistics and Analysis**

Fort Larned National Historic Site offers a rare visitor experience centered on the interpretation of the historical resources. The site is open all year for day use and receives visitors

throughout the year. The nearest overnight lodging is 6 miles away in Larned, Kansas. Table 5 and figure 1 display the reported visitor use for the period 1980 through 1992.

**Methods of Counting.** In the early 1980s visits were hand-recorded by rangers, but only those visitors actually entering the visitor center were counted. The levels of visitation recorded were between 20,000 and 25,000. This counting method consistently underestimated the number of visitors because the rangers could not devote full time to the task and not all visitors entered the visitor center. Visitors touring the grounds on their own would do so unobserved and therefore were not counted.

Since 1983 vehicle counts have been made in addition to the counts at the visitor center. Two automatic traffic counters were installed. One was laid on the park entrance road to record visitors entering the park to tour the fort. The other was placed on the access road to the picnic/roadside rest area. The picnic area access was uncontrolled and the area was still used as a highway rest stop by the public. The large visitation increase in 1983 is attributed to these changes in the way visitation was counted and reported.

In 1987 the picnic area was remodeled to eliminate the separate access road, and one traffic counter was removed. Visitation counting procedures were thus changed once again. The remaining traffic counter is located to count all vehicles operated by the general public that enter the park. Access is controlled by a gate that is locked when the park is closed, so extraneous vehicle counts have been deleted from the park's reported visitation.

The consequence of these changes is a more accurate reporting of visitor use. Forecasting future visitation is difficult due to the lack of reliable data. Visitation data prior to 1983 is low because not all visitors were counted. Data for 1983 through 1986 is high because the visitors who used only the picnic area (as a roadside rest area) were included with park visitors.

TABLE 5: VISITOR USE 1980-1992

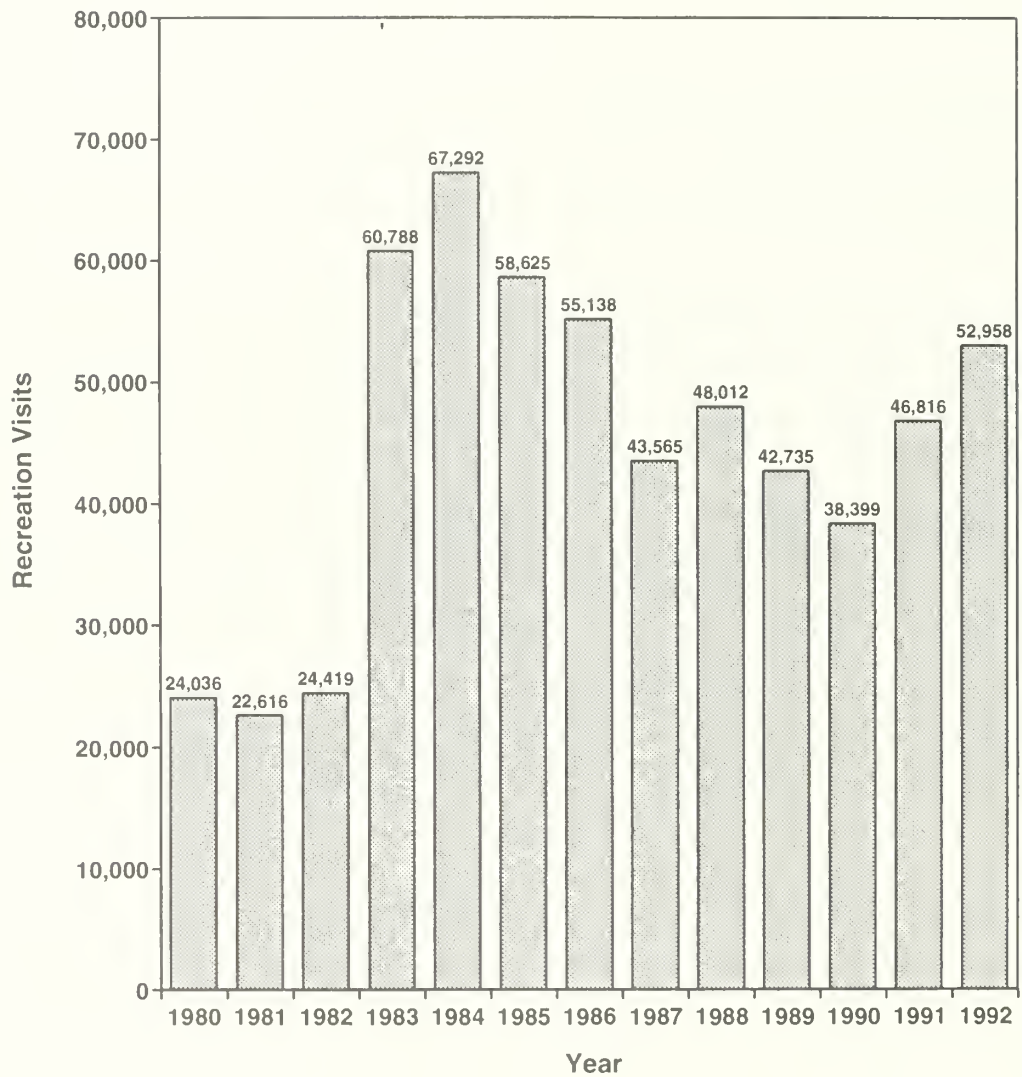
| Year   | Recreation Visits |
|--------|-------------------|
| 1992   | 52,958            |
| 1991   | 46,816            |
| 1990   | 38,399            |
| 1989   | 42,735            |
| 1988   | 48,012            |
| 1987** | 43,565            |
| 1986   | 55,138            |
| 1985   | 58,625            |
| 1984   | 67,292            |
| 1983*  | 60,788            |
| 1982   | 24,419            |
| 1981   | 22,616            |
| 1980   | 24,036            |

\* Counting procedures were changed. Traffic counters were installed to automatically record visitation. Prior to 1983 visitors were counted by hand.

\*\* Picnic area was remodeled and one traffic counter was removed.

Source: National Park Service, WASO, Socioeconomic Studies Division

Figure 1.  
Fort Larned National Historic Site  
Recreation Visits 1980-1992



**Month by Month Data and Analysis (latest complete year 1992).** By definition, recreation visits are the entries of persons to lands or waters for recreational purposes. Nonrecreation visits include persons going to and from inholdings; commuter and other through traffic; tradespeople with business within the park; any civilian activity related to the pursuit of a gainful occupation (e.g., guides); government personnel (other than National Park Service) with business in the park; citizens using NPS buildings for civic or local government business, or attending public meetings; and research activities independent of NPS interests (e.g., meteorological research). Fort Larned National Historic Site does not report nonrecreational visits since it receives only incidental nonrecreational use due to its controlled access. Much of the picnic area use during the period 1983-1986 could have been attributed to through traffic and thus would have been classified as nonrecreational use.

The visitation pattern for Fort Larned National Historic Site follows the typical profile. Visitation begins to increase in the spring, peaks during the summer, declines in the fall, and reaches the lowest level during the winter. The highest number of visits occur during summer when the weather is best for vacationing and children are out of school. During the spring and fall, numerous large school groups visit the park.

Visitation data by month for 1992 are displayed in table 6 and figure 2. Visitation to the park in 1991 was 28.1% above the visitation recorded for the comparable period in 1990. Visitation for 1992 exceeded 52,000 recreation visits for an increase of 13.1%.

**TABLE 6: RECREATION VISITS BY MONTH FOR 1992**

| Month        | Recreation Visits |
|--------------|-------------------|
| January      | 1,320             |
| February     | 1,114             |
| March        | 2,780             |
| April        | 3,854             |
| May          | 7,989             |
| June         | 7,120             |
| July         | 9,047             |
| August       | 7,638             |
| September    | 4,542             |
| October      | 3,742             |
| November     | 1,804             |
| December     | 2,008             |
| <b>Total</b> | <b>52,958</b>     |

Source: National Park Service, WASO, Socioeconomic Studies Division

**Peak Use Analysis.** The park staff estimates that peak visitation days are the Fourth of July and other special event days. On these days approximately 500 persons visit the park. Throughout the year the heaviest visitor use occurs on Saturdays and Sundays. On these days the park has about fifty percent more visitors than on any other day of the week. Most visitors live in Kansas (table 7). Foreign visitors made up only 3.3% of the total in 1989.

**TABLE 7: ORIGINS OF VISITORS FOR 1991**

| <b>Origins of Visitors</b>     | <b>Percent of Total Visitation</b> |
|--------------------------------|------------------------------------|
| Kansas                         | 52.1%                              |
| Adjacent States                | 12.4%                              |
| Rocky Mountains & North Plains | 1.4%                               |
| Northeast                      | 4.5%                               |
| Midwest                        | 11.1%                              |
| Southeast                      | 4.3%                               |
| Southwest                      | 5.3%                               |
| Far West                       | 5.4%                               |
| Foreign                        | 3.3%                               |
| Total                          | 100.0%                             |

Source: Fort Larned National Historic Site

In 1992 the peak visitation month was July, when visitation averaged over 292 visitors per day. Over the last few years the months of June, July, and August have alternated as the months of highest visitation.

The typical length of stay for visitors at Fort Larned National Historic Site is two hours. The principal visitor activity is touring the historic buildings, either alone or with a guided tour. Visitation far exceeds the norm on the days when special events such as living history displays and military reenactment are held.

### **Projections of Potential Demand**

Projections of future use are based on the visitation data reported for the years 1987 through 1992. High, medium, and low values were calculated for the years 1993 through 1997 (table 8 and figure 3). A process of double exponential smoothing with a weight of 10% provided the best forecasts for visitation. The average forecast error was 4,226. The high and low projections represent the approximate 90% forecast interval. There is a 0.90 probability that the actual values of the forecast variable will fall between the high and low projections. With only five data points, high and low projections could not be calculated for the years 1998 through 2002.

TABLE 8: PROJECTIONS OF POTENTIAL DEMAND

| Year | Low Level of Demand | Medium Level of Demand | High Level of Demand |
|------|---------------------|------------------------|----------------------|
| 1993 | 40,340              | 49,370                 | 58,390               |
| 1994 | 41,360              | 50,470                 | 59,590               |
| 1995 | 42,230              | 51,580                 | 60,830               |
| 1996 | 48,480              | 52,690                 | 56,904               |
| 1997 | 44,460              | 53,800                 | 63,140               |
| 1998 | na                  | 54,910                 | na                   |
| 1999 | na                  | 56,020                 | na                   |
| 2000 | na                  | 57,130                 | na                   |
| 2001 | na                  | 58,240                 | na                   |
| 2002 | na                  | 59,340                 | na                   |

na = not available, insufficient data to compute

Source: National Park Service, Denver Service Center, Central Team, Branch of Planning

### Santa Fe National Historic Trail

The Santa Fe National Historic Trail was established on May 8, 1987. In May 1990 the comprehensive management and use plan for the trail was approved. Fort Larned National Historic Site is closely related to the Santa Fe Trail and is a logical interpretation point for the central portion. The effect on visitation from the addition of Santa Fe Trail interpretation at this or any other national park area along the trail is uncertain at this time. It is expected that visitation to these sites would increase due to increased promotion, interpretation, and public knowledge of the trail. However, other factors will also affect visitation to these sites. Specific cause and effect relationships regarding visitation cannot be readily determined.

Some trail segments and sites are not federally owned, but have been included as part of the Santa Fe National Historic Trail through the site/segment certification process. The existing Santa Fe Trail Center in Larned, Kansas is one example of such a site. It is certified as an interpretive center and is included as part of the Santa Fe Trail. Visitation at the Santa Fe Trail Center has been in the range of 8,000 to 10,000 visitors per year for the last few years. Visitation data for NPS sites along the Santa Fe Trail prior to its designation as a national historic trail are presented in table 9.

Figure 2

## Fort Larned National Historic Site

Actual and Projected Visits

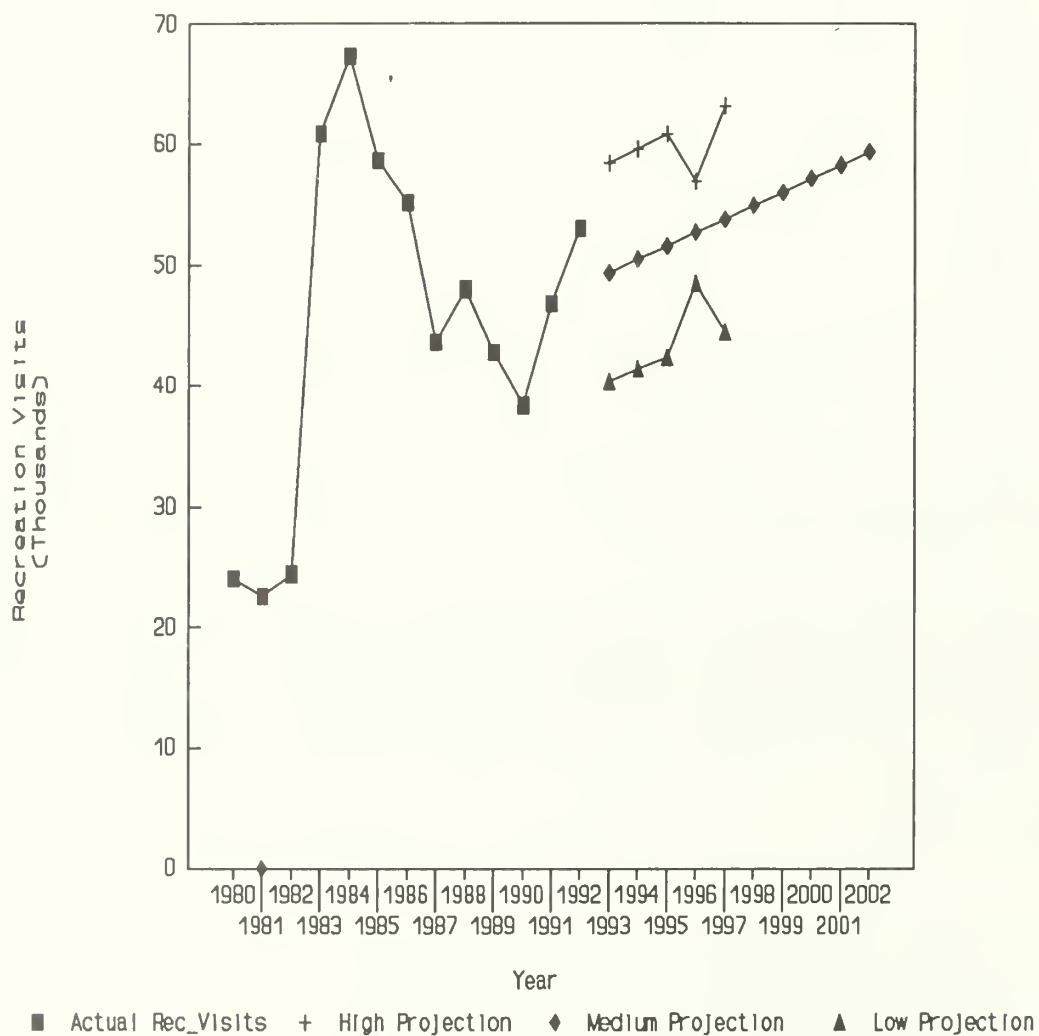


**TABLE 9: ANNUAL VISITATION TO NATIONAL PARK SYSTEM AREAS  
ALONG THE SANTA FE NATIONAL HISTORIC TRAIL**

| Year | Fort Larned | Bent's Old Fort | Fort Union | Pecos National<br>Historical Park |
|------|-------------|-----------------|------------|-----------------------------------|
| 1990 | 38,400      | 43,200          | 17,000     | 45,300                            |
| 1989 | 42,700      | 45,500          | 20,000     | 44,600                            |
| 1988 | 48,000      | 41,800          | 18,100     | 48,600                            |
| 1987 | 43,600*     | 41,200          | 14,400     | 45,300                            |
| 1986 | 55,100      | 44,800          | 13,400     | 44,800                            |
| 1985 | 58,600      | 42,900          | 13,400     | 44,600                            |

\* Counting procedures were changed.

Source: National Park Service, WASO, Socioeconomic Studies Division

## REGIONAL LAND USE AND REGIONAL VISITOR FACILITIES AND SERVICES

### Land Use

Agricultural lands surround the park. Flood irrigation or dry land farming practices are used on surrounding fields. Center pivot irrigation, if used, would significantly impact the visual experience of visitors. Oil and gas exploration would also impact the viewshed of the park.

Views from the park are not pristine. Roads, power lines, water towers, and agricultural activity are the main visual intrusions seen from the park. Some scenic easements have been acquired and views from the fort's historic core area to the north, east, and west are screened by trees and riparian vegetation growing along the Pawnee River. Because of the relatively flat terrain and low vegetation, the views to the south are interrupted in several places by the types of intrusions previously mentioned. Even so, one can get a feeling for the vast prairie faced by the Indians, soldiers, and settlers in the late nineteenth century.

Pawnee County has no countywide zoning. Lands adjacent to Fort Larned are privately owned, either by individuals or small corporations, and they are unzoned. There are no known plans for new or accelerated uses of lands adjacent to the park.

### Visitor Facilities and Services

Although it is only a small town, Larned provides all necessary visitor services. There are two hotels and two motels that have a combined total of 103 rooms. A variety of stores and restaurants are located in the downtown area.

The city provides 147 acres of public parkland, including nine tennis courts, seven ball fields, a nine hole golf course, and a swimming pool. The private sector offers a theater, golf course and country club.

Health care facilities are provided by Central Kansas Medical Center, St. Joseph Campus. Located in Larned, it is a 68-bed primary acute care facility.

## Regional Recreational Resources

**Santa Fe Trail Center.** The Santa Fe Trail Center is located 2 miles west of Larned on Kansas Highway 156. It interprets the history of the Santa Fe Trail from the early Indian inhabitants and Spanish Conquistadors through the settlement era up to 1919. It is a nonprofit organization owned and operated by the Fort Larned Historical Society. A professional director/curator manages the facility with a help of staff and volunteers. The center was opened in 1974. The facility houses museum collections, archives and a research library. Several historic buildings including a sod house, a dugout home, a one room schoolhouse, and a railroad depot are located on the grounds. The center is certified by the National Park Service as a Santa Fe Trail interpretive center. Certification was received in April 1991. The center works closely with Fort Larned National Historic Site to promote and interpret the Santa Fe Trail. Visitation in recent years has ranged from 8,000 to 10,000 per year.

The Santa Fe Trail Center and Fort Larned National Historic Site have developed a strong, cooperative relationship. The Santa Fe Trail Center is locally staffed and serves as a museum presenting the history of the region. This story includes the Santa Fe Trail, but the two entities are taking care to overlap their interpretive messages without duplication. The continuation of this relationship will benefit both entities and the visiting public.

**Central States Scout Museum.** The Central States Scout Museum is located in Larned, Kansas. This small museum houses collections of Boy and Girl Scout memorabilia. It is open for a couple of hours each evening and by appointment. Visitation is relatively light.

**Dodge City, Kansas.** Dodge City is about sixty-two miles southwest of Larned. Its tourism industry is based on western history and Hollywood themes. The Front Street area is a replica of the old wild west, including the Long Branch Saloon made famous in the long running "Gunsmoke" television series. A wild west variety show is staged during the summer season. The Boot Hill Museum with its collection of graves, guns, and western relics is popular. Approximately 100,000 tourists a year visit the Dodge City attractions.

**Other.** A campground has been considered for the vicinity but, due to the lack of demand, no such business has been developed by either the private or public sector. This demand is likely to remain unchanged in the foreseeable future.

## Socioeconomic Environment

Pawnee County is located in the agricultural heartland of central Kansas. The historic Santa Fe Trail ran through the middle of the county, but the four small communities that developed in the county were located along the railroad that was built in the early 1870s. Interstate 70, which is now the main east-west motor vehicle route through the state, bypassed the town of Larned by about fifty miles. The sparsely settled rural area is economically dependent upon its agricultural land base and the Larned State Hospital.

## Population

Nearly two-thirds of the population of Pawnee County lives in the city of Larned (table 10). Three other small towns, Burdett, Garfield, and Rozel, are the only other population centers within the county. Both the town and the county have declined in population since 1960.

**TABLE 10: POPULATION OF LARNED AND PAWNEE COUNTY**

| Year          | 1990  | 1980  | 1970  | 1960   |
|---------------|-------|-------|-------|--------|
| Larned        | 4,800 | 4,811 | 4,567 | 5,001  |
| Pawnee County | 7,600 | 8,065 | 8,484 | 10,254 |

Source: Kansas Department of Commerce

## Economy

Agriculture is the leading industry in Pawnee County; 86% of the county's 479,360 acres are tillable. Around 70,000 acres are devoted to irrigated crops. Approximately 1,280 farms are located within the county. The chief crops are wheat, grain sorghum, forage sorghum, corn, soybeans, and alfalfa. The county is known for the excellent quality of its alfalfa and ranks in the top three counties in Kansas in alfalfa production.

Health care, including the Larned State Hospital, is the next leading industry in the county. The Larned State Hospital employs 928 people. The new Larned Correctional Mental Health Facility was constructed on the grounds of the Larned State Hospital and opened in January of 1992. It added approximately 250 new jobs to the county's economy. The county has had a relatively low level of unemployment (table 11).

**TABLE 11: PAWNEE COUNTY WORK FORCE STATISTICS, MARCH 1990**

| Category            | Number of People or Percent |
|---------------------|-----------------------------|
| Civilian Work Force | 3,641                       |
| Employed            | 3,537                       |
| Unemployed          | 104                         |
| Unemployment Rate   | 2.9%                        |

Source: Kansas Department of Commerce

**TABLE 12: EMPLOYEES IN MAJOR ECONOMIC SECTORS, MARCH 1990**

| Economic Sector  | Number of People |
|------------------|------------------|
| Manufacturing    | 75               |
| Services         | 450              |
| Government       | 1,500            |
| Wholesale/Retail | 525              |
| Agriculture      | 525              |

Source: Kansas Department of Commerce

Many of the people employed in the county work in service or wholesale/retail sector jobs that are directly linked to the county's agricultural industry. The government sector includes the positions at the Larned State Hospital, and city and county positions.

The 1988 per capita personal income for Pawnee County was \$17,221. The average per capita personal income for the state of Kansas was \$15,740 for the same year.

### Transportation/Access

Larned, Kansas is served by U.S. 56 (Santa Fe Trail), and Kansas highways 156 and 19. An extensive system of county roads links all parts of the county with Larned. There is a city and county airport 1 mile north of Larned. It has one 3,550-foot paved and lighted runway with two 3,100-foot-long sod diagonals. The city is served by the Santa Fe Railroad, Mistletoe Express, Federal Express, and United Parcel Service. Wichita, Kansas is about 137 miles from Larned. Regularly scheduled commercial airline passenger service is available from Wichita. Table 13 lists the distance between Larned and selected population centers.

**TABLE 13: DISTANCE BETWEEN LARNED, KANSAS, AND SELECTED CITIES**

| City and State  | Distance in Miles |
|-----------------|-------------------|
| Chicago, IL     | 772               |
| Dallas, TX      | 471               |
| Denver, CO      | 402               |
| Kansas City, MO | 273               |
| Minneapolis, MN | 666               |
| St. Louis, MO   | 529               |

Source: Kansas Department of Commerce

## ENVIRONMENTAL CONSEQUENCES

### ALTERNATIVE ONE: NO ACTION

#### Impacts on Natural Resources

The continuation of existing uses and management policies would create no new impacts on natural resources.

**Topography.** The surface topography would be unchanged because no new development would be called for in this alternative.

**Floodplains and Wetlands.** Both the historical buildings and land resources of the principal unit would remain within the 100- and 500-year floodplains and be exposed to seasonal flooding hazards from the Pawnee River. Existing conditions would cause no new impacts on wetlands.

**Soils/Prime and Unique Farmlands.** The soils of both the principal unit and the detached Santa Fe Trail area would remain unaffected and unchanged from current conditions.

**Vegetation.** Vegetation management and exotic plant species control would continue and neither vegetation distribution nor composition would be affected.

**Wildlife.** Wildlife species composition and distribution would have no new effects. Current management and temporary effects from routine maintenance would continue.

**Threatened and Endangered Species.** Federal and state protected species would continue with no adverse effect and have no new impacts.

**Air Quality/Water Quality.** Both air and water quality would remain unchanged. Ground water for human consumption would continue to be poor.

#### Impacts on Cultural Resources

The implementation of this alternative would not produce any new negative effects on cultural resources. However, external forces unrelated to this alternative, such as possible increases in visitation due to the addition of the Santa Fe trail interpretive theme, may impact the grounds and historic structures.

Visual intrusions such as the handicapped parking, highway bridge, overhead utility lines, modern structures off-site but within view of the historic core area, and the irrigation ditches south of the historic core area, would not be removed or otherwise mitigated.

Vehicular traffic would no longer be routed through the park due to the replacement of the county road bridge west of the fort. This would reduce the amount of vehicular traffic, noise, dust, and visual intrusions that interrupt or degrade the visitor's experience.

The historic horse-drawn ambulance and freight wagons would continue to be outdoors on the fort grounds and exposed to the elements. The Conestoga wagon on loan from Bent's Old Fort National Historic Site would continue to be unsuitably displayed in the commissary storehouse.

The visitor center and park headquarters in barracks HS-1 would continue to be overcrowded. Buildings HS-2 through HS-8 would continue to serve their existing modern functions, such as curation and maintenance storage. Officer's quarters HS-9 would continue as it now exists---unrestored and not open to the public.

### **Impacts on Visitor Use**

Modern visual intrusions on the historic scene, such as overhead power lines, the highway bridge, off-site modern structures, and handicapped parking, would continue.

There would be no improvement in visitor circulation from the parking lot to the historic core, or in fee collection.

Since the interpretive program will expand with the addition of the Santa Fe trail story, it is likely that visitation will increase, resulting in crowding and degradation of the visitor experience. Staff levels would remain constant and there would be no opportunity to serve the public's growing interest and awareness of the Indian cultures. The ability of the park to accommodate special event programs and to increase visitor services would be limited.

### **Socioeconomic Impacts**

There would be no additional beneficial socioeconomic impacts as a result of this alternative. However, visitation increases will bring economic benefits to the city of Larned and its retail community in the form of greater retail sales. Larned is the only service and retail center near Fort Larned, and no concessions or other services are offered at the fort.

## **ALTERNATIVE TWO: MODERN USE OF EXISTING HISTORIC STRUCTURES**

### **Impacts on Natural Resources**

The reallocation of uses within existing historic structures would have minimal effect on natural resources. No natural resource impacts would occur at the Santa Fe Trail ruts site.

**Topography.** The surface topography would remain unchanged. The expansion of the existing maintenance structure and the addition of a maintenance storage structure would not require significant alteration of existing landform or relief.

**Floodplains and Wetlands.** Both the historical buildings and land resources of the principal unit would remain within the 100- and 500-year floodplains and be exposed to seasonal flooding hazards from the Pawnee River. Existing conditions would cause no new impacts on wetlands.

**Soils/Prime and Unique Farmlands.** A small percentage of existing soils of the principal unit would be permanently compacted by the maintenance structure addition (750 square feet), the new maintenance storage facility (1,200 square feet) and the carport (720 square feet).

*Synopsis of effect:* Approximately 2,670 square feet of surface soil would be permanently compacted and displaced by both buildings and a covered carport. A maximum of 7,260 square feet would be temporarily compacted during construction.

Use of prime and unique farmlands on both the principal unit and the detached Santa Fe Trail area would remain unaffected and unchanged from current conditions.

**Vegetation.** The addition to the existing maintenance building would permanently displace approximately 750 square feet of previously disturbed vegetation. Approximately 1850 square feet of previously disturbed maintenance yard would be temporarily affected during construction.

Construction of a new maintenance storage building would permanently displace approximately 1,200 square feet of previously disturbed vegetation. Approximately 1,300 square feet of previously disturbed maintenance yard would be temporarily affected during construction.

Construction of a covered carport would permanently displace approximately 720 square feet of previously disturbed maintenance yard area. Approximately 730 square feet would be temporarily affected during construction.

Underground placement of water distribution lines would temporarily affect approximately 52,000 square feet (1.19 acres) of surface dirt and vegetation. Approximately 18,000 square feet (0.41 acre) of this disturbance is previously disturbed surface dirt and vegetation on road right-of-way. Temporarily disturbed vegetation would be reclaimed with indigenous prairie vegetation.

Underground burial of utility lines would require temporary disturbance to approximately 47,000 square feet (1.07 acres) of surface vegetation. Approximately 10,000 square feet (0.22 acre) would be new disturbance and approximately 37,000 square feet (0.85 acre) would be in previously disturbed areas and road right-of-way. Disturbed soil and vegetation would be reclaimed with same vegetation existing prior to disturbance.

Removal and reclamation of irrigation ditches would require a temporary impact on approximately 70,000 square feet (1.60 acres). Reclamation of irrigation ditches would result in a restoration (net gain) of approximately 35,000 square feet (0.80 acre) of prairie vegetation

Entrance signs would result in a net loss of prairie vegetation of about 75 square feet. Installation of new entrance sign would permanently remove approximately 175 square feet of prairie vegetation. Removal and reclamation of existing entrance sign would restore approximately 100 square feet of prairie vegetation.

Visual screen tree plantings would increase woodland area by approximately 57,500 square feet (1.32 acres).

All effects of temporary vegetation disturbance would be limited to one growing season or less.

*Synopsis of effect:* Permanent displacement would occur to approximately 2670 square feet of previously disturbed vegetation and about 75 square feet to undisturbed vegetation. Temporary construction displacement would occur to nearly 58,880 square feet (1.35 acres) of previously disturbed vegetation and approximately 114,075 square feet (2.61 acres) to undisturbed vegetation. Permanent restoration of prairie vegetation would exceed permanent displacement by 32,330 square feet (0.74 acre). Visual screen tree planting would increase woodland vegetation by 57,500 square feet (1.32 acres).

**Wildlife.** Mammals, insects and some avian species would be temporarily displaced by construction activity, but would generally be unaffected. Mortality of a limited number of small mammals and insects might occur because of construction activities, but no adverse effect on wildlife distribution or composition would occur. Effects of noise and construction activity would be limited to the actual construction period. Revegetation of visual screen tree planting and restored prairie may slightly increase populations of some small wildlife species because of increased cover and forage.

*Synopsis of effect:* Approximately 32,250 square feet (0.74 acre) of restored prairie habitat and 57,500 square feet (1.32 acres) of woodland habitat would be permanently increased for small mammals and insects.

**Threatened and Endangered Species.** Primary habitat for protected species does not exist at Fort Larned National Historic Site and no known protected species reside in the immediate area. Listed species would probably not be adversely affected, but limited use by some listed avian species during migration is possible and potential adverse impacts would be avoided by scheduling construction during nonmigration periods.

**Air Quality.** Short-term localized degradation of air quality would occur due to dust disturbance during construction activities. Long-term negative effects to air quality would not occur.

**Water Quality.** Surface or ground water resources would not be adversely affected. Water quality for human consumption would improve through new water filtration and distribution system.

## Impacts on Cultural Resources

The implementation of this alternative, based on the Cultural Landscape Report, would allow visitors to gain a feeling of the site as it existed over one hundred years ago. Although some visual intrusions such as the road, handicapped parking lot, and highway bridge would remain, the majority would be removed or mitigated. Overhead utility lines would be buried within park boundaries. The irrigation ditches south of the historic core would be removed.

Other historic structures, such as commanding officer's quarters HS-8, would be restored to their historic appearance. Barracks HS-1 and officer's quarters HS-9 would be reconfigured to expand the visitor center and provide park offices, respectively. Officer's quarters HS-9 would not be restored or opened to the public. The adaptation of officer's quarters HS-9 to house administrative/headquarters functions would affect its interpretive value since it would not be available for interpretation. Providing handicapped accessibility for park staff as well as modern utilities and restrooms would damage the historic integrity of the building.

The historic horse-drawn ambulance and freight wagons would continue to be displayed outdoors on the fort grounds, exposed to the elements. The Conestoga wagon on loan from Bent's Old Fort National Historic Site would continue to be displayed inside the commissary storehouse.

Some of the overcrowding of the visitor center and park headquarters would be alleviated.

### **Impacts on Visitor Use**

There would be no improvement in visitor circulation from the parking lot to the historic core, or in fee collection. Visitor access to cultural resources would be expanded and the overall visitor experience enhanced by improvements to the interpretive program and park facilities.

The interpretive program would expand to three major themes, placing increased pressure on the staff and resources. Visitation would continue to increase, resulting in crowding and degradation of the visitor experience during peak use periods. The staff level would remain constant even though the interpretive mission and the level of visitation have increased. There would be no opportunity to accommodate the public's increased interest and awareness of the Indian cultures.

### **Socioeconomic Impacts**

Beneficial socioeconomic impacts would occur as a result of the expanded interpretive program. The expanded interpretation would probably result in broader public appeal of this site and additional visitation (over and above the increases now being experienced). This increase in visitation would probably result in increased revenues and retail sales in the City of Larned. A minor amount of short-term economic benefits would accrue to the region as a result of construction-related expenditures at the park.

Increased long term funding for operations and maintenance is required, including increasing the staff by four FTEs. This would equate to an operations cost increase of \$90,000 per year (in 1993 dollars) for salaries and employee benefits. This amount would escalate annually with inflation and normal pay increases. Still more costs are incurred annually to provide tools and supplies for these additional workers.

## **ALTERNATIVE THREE: RESTORE EXISTING HISTORIC STRUCTURES**

### **Cumulative Impacts**

Upstream Pawnee River flood and irrigation projects have slightly altered (lessened) flood impacts to Fort Larned with an unknown effect. Decrease in 100-year or 500-year flood impacts are estimated to be minor.

Pawnee County may remove a small, downstream irrigation dam on the Pawnee River approximately 0.5 mile east of the west boundary of Fort Larned National Historic Site.

Removal of this silt-filled and inoperative impoundment may produce a small surface water flow in the streambed.

No additional cumulative impacts would occur at or near Fort Larned National Historic Site because of these alternatives. No present or future foreseeable National Park Service or other agency projects are currently known to be scheduled.

### Impacts on Natural Resources

Some effects on natural resources could be expected in this alternative. The visitor center, parking area, and trails would permanently displace vegetation. Temporary construction impacts would be mitigated by planting the disturbed areas with native vegetation. Other areas within the site would be rehabilitated and/or visually screened after administrative and visitor service functions were moved. Restoration of existing historic structures would have moderate effect on natural resources. No impacts to natural resources would occur at the Santa Fe Trail ruins site.

Areas immediately surrounding new buildings, paved areas, and other impervious structures would be temporarily disturbed and compacted due to construction activities. Removal and reclamation of nonhistoric roads, entrance road, gravel parking area and fee collection station would uncompact and restore approximately 182,800 square feet (4.19 acres).

Use of prime and unique farmlands on both the principal unit and the detached Santa Fe Trail area would remain unaffected and unchanged from current conditions.

*Synopsis of effect:* Approximately 94,650 square feet (2.17 acres) of surface soil would be permanently compacted and displaced by impervious structures. Restoration of previously compacted soils would exceed new permanent impervious structure compaction by almost 88,150 square feet (2.02 acres). About 211,845 square feet (4.86 acres) would be temporarily compacted or affected during construction.

**Vegetation.** The addition to the existing maintenance building would permanently displace approximately 750 square feet of previously disturbed vegetation. Approximately 1850 square feet of previously disturbed maintenance yard would be temporarily affected during construction.

Construction of a new maintenance storage building would permanently displace approximately 1,200 square feet of previously disturbed vegetation. Approximately 1,300 square feet of previously disturbed maintenance-yard would be temporarily affected during construction.

A new visitor center/administrative facility would permanently displace about 8730 square feet (0.20 acre) of prairie vegetation. Nearly 4,000 square feet of vegetation would be disturbed during construction.

Construction of a covered carport would permanently displace approximately 720 square feet of previously disturbed vegetation. Approximately 730 square feet would be temporarily affected during construction.

Construction of paved interpretive trails would permanently displace about 16,200 square feet (0.37 acre) of prairie vegetation. Approximately 10,800 square feet (0.24 acre) would be temporarily disturbed during construction.

Approximately 51,300 square feet (1.17 acres) of vegetation would be permanently displaced by construction of the paved access road and visitor parking area. Temporary construction disturbance would occur to approximately 16,950 square feet (0.39 acre).

Intersection improvements to Kansas Highway 156 would permanently displace about 15,570 square feet of vegetation. Construction would temporarily affect approximately 9950 square feet (0.22 acre).

Underground placement of water distribution lines would temporarily affect approximately 52,000 square feet (1.19 acres) of surface dirt and vegetation. Approximately 18,000 square feet (0.41 acre) of this disturbance is previously disturbed surface dirt and vegetation on road right-of-way. Temporarily disturbed areas would be revegetated.

Underground burial of utility lines would require temporary disturbance to approximately 47,000 square feet (1.07 acres) of surface vegetation. Approximately 10,000 square feet (0.22 acre) would be new disturbance and approximately 37,000 square feet (0.85 acre) would be in previously disturbed areas and road right-of-way. Disturbed areas would be revegetated.

Installation of an underground telephone line would temporarily affect approximately 41,000 square feet (0.94 acre) of previously disturbed road right-of-way. The disturbed areas would be revegetated.

New natural gas service line would require a temporary disturbance of approximately 6,000 square feet (0.13 acre) of prairie vegetation. The disturbed area would be revegetated.

Entrance signs would result in a net loss of prairie vegetation of about 75 square feet. Installation of a new entrance sign would permanently remove approximately 175 square feet of prairie vegetation. Removal of the existing entrance sign would require about 100 square feet of revegetation.

Removal of the irrigation ditches would result in a temporary impact on approximately 70,000 square feet (1.60 acres). Revegetation of the disturbed areas would result in a restoration (net gain) of approximately 35,000 square feet (0.80 acre) of vegetation.

Removal and reclamation of the nonhistoric roads, parking area, fee collection station and entrance road corridor would require revegetation of approximately 182,800 square feet (4.19 acres). This would result in a net gain of 88,150 square feet (2.02 acres) of vegetation.

*Synopsis of effect:* Permanent displacement of vegetation would occur to about 94,550 square feet (2.17 acres). Temporary effects to vegetation by construction would occur to nearly 165,580 square feet (3.80 acres) of previously undisturbed vegetation and 96,000 square feet (2.20 acres) of previously disturbed areas. Restoration of vegetation would occur to approximately 217,800 square feet (5.00 acres). Restoration of vegetation would exceed permanent displacement by 123,250 square feet (2.82 acres).

**Wildlife.** During construction a small number of small-sized wildlife would be temporarily displaced and death of a few mammals and insects may occur, but there would be no adverse effect on wildlife distribution or composition. Some currently occupied small animal habitats would be removed by new impervious structures, but replaced and expanded by reclaimed habitat.

Effects of noise and construction activity would be limited to actual construction period. Revegetation of visual screen tree planting and restored prairie may slightly increase populations of some small wildlife species because of increased cover and forage.

*Synopsis of effect:* Approximately 3 acres of restored prairie habitat and 1½ acres of woodland habitat would be added for wildlife.

**Threatened and Endangered Species.** Primary habitat for protected species does not exist at Fort Larned National Historic Site and no known protected species reside in the immediate area.

**Air Quality.** Short-term localized degradation of air quality would occur because of dust disturbance during construction activities. Long-term negative effects to air quality would not occur.

**Water Quality.** Surface and ground water would not be adversely affected. Removal of the downstream dam may restore water flow in the Pawnee River. The construction of a new water filtration and distribution system would improve the quality of the drinking water.

### **Impacts on Cultural Resources**

On-site modern intrusions, such as vehicular traffic, the highway bridge, irrigation ditches, and the handicapped parking lot would be removed or visually screened.

All historic structures would be restored, and all visible modern uses removed from them, allowing the visitor to gain a feeling of the site as it was over a century ago. The commanding officer's quarters HS-8 would be opened for interpretation. Impact on archeological sites would be mitigated through a data recovery program.

### **Impacts on Visitor Use**

Typically, parks of this size and type have increased visitation after they construct new facilities and improve visitor services. The increase in visitation is generally immediate, reflecting the enhanced visitor experience. Within a few years, the park reaches a new plateau of visitation and use, akin to a stair step pattern.

Accessibility to the resources would be improved for all park visitors.

The visitor experience would be improved by providing better visitor orientation, resource interpretation, resource protection, and public safety. This would be accomplished by the new visitor center and expanded interpretive services. Using the mess hall as a staging area for

school groups would relieve congestion in the visitor center. Modern visual intrusions would be removed and the visitor circulation pattern improved. With such improvements, the length of the average visitor's stay is expected to increase somewhat.

Fee collection would be improved by properly locating the collection point and instituting consistent, equitable methods of collection. This would also permit the collection of better baseline data about visitor use.

### **Socioeconomic Impacts**

Short-term economic benefits would be realized due to construction-related expenditures within the local economy.

Increased long-term funding for operations and maintenance would be required, including the addition of five FTEs. The added staff would require an increase in the operations and maintenance budget of \$110,000 per year (in 1993 dollars) for salaries and employee benefits. This added base funding amount would escalate annually with inflation and normal pay increases. Still more costs would be incurred annually to provide tools and supplies for these additional workers. If this alternative is implemented without sufficient corresponding increases in O&M funding, the park could end up with a facility that it cannot afford to operate.

Long term positive economic benefits to the community would include the creation of five permanent jobs. These jobs would increase the local tax base and retail sales volume, producing more revenues to state and local governments. The local and regional business communities would benefit from the "multiplier effect" of these new dollars circulating several times through the local economy as goods and services are purchased there.

## **ALTERNATIVE FOUR: RECONSTRUCT KEY STRUCTURES AND RESTORE EXISTING HISTORIC STRUCTURES**

### **Impacts on Natural Resources**

Elements of this reconstruction and restoration alternative would result in moderate effects to natural resources. No impacts to natural resources would occur at the detached Santa Fe Trail area.

**Topography.** The surface elevation around the new visitor center/administration building would be slightly elevated and altered. Slight localized elevation changes may occur through diking and building elevation for floodplain protection. Topography at the detached Santa Fe Trail ruts area would remain unaffected.

**Floodplains and Wetlands.** The majority of land resources at the principal unit, the historic core buildings, and the maintenance buildings would remain exposed to flooding hazards to preserve the historic scene and occurrences. The visitor center/administrative facility and maintenance buildings would be elevated on earthen pads or diked to remove them from the 500-year floodplain. The 200-foot-long footbridge would completely span the riverine channel and would not impact wetlands. The existing Pawnee River bridge would be removed and wetlands reclaimed.

*Synopsis of effect:* A gain of approximately 3240 square feet in riverine wetlands would occur with restoration of wetlands at the bridge removal site.

**Soils/Prime and Unique Farmlands.** Approximately 119,050 square feet (2.73 acres) of existing soils of the principal unit would be permanently compacted by the new maintenance yard (27,200 square feet), the new visitor center/administrative facility (8730 square feet), the reconstructed sutler's store (1300 square feet), the reconstructed sutler's mess room (742 square feet), the reconstructed sutler's residence (623 square feet), the reconstructed adjutant's office (450 square feet), the reconstructed stable (6916 square feet), visitor access road and parking area (51,300 square feet), intersection improvements (15,750 square feet), and the maintenance access road (6030 square feet). An additional area of permanent compaction would occur at the interpretive trails (16,200 square feet),

Approximately 265,500 square feet (6.09 acres) immediately surrounding new buildings, paved areas, and other impervious structures would be temporarily disturbed and compacted due to construction activities.

Removal and reclamation of nonhistoric roads (22,500 square feet), entrance road (60,300 square feet), gravel parking area (99,900 square feet), maintenance yard (27,200 square feet), irrigation ditches (35,000 square feet) and fee collection station (100 square feet) would uncompact and restore approximately 145,100 square feet (3.33 acres).

*Synopsis of effect:* Approximately 135,250 square feet (3.10 acres) of surface soil would be permanently compacted and displaced by new impervious structures. Restoration of previously compacted soils would exceed new permanent impervious structure compaction by almost

9850 square feet (0.22 acres). About 265,500 square feet (6.09 acres) would be temporarily compacted or effected during construction.

**Vegetation.** The new visitor center/administrative building would permanently displace 8730 square feet of vegetation. Temporary disturbance to vegetation during construction would encompass about 4,000 square feet.

Construction of a covered carport would permanently displace approximately 720 square feet of previously disturbed vegetation. Approximately 730 square feet would be temporarily affected during construction.

Permanent vegetation displacement would occur because of reconstruction of the sutler's store (1,300 square feet), the sutler's mess (742 square feet), the sutler's residence (623 square feet), the adjutant's office (450 square feet), and the cavalry stable (6916 square feet). Reconstruction activities would cause temporary disturbance to approximately 7445 square feet.

Permanent vegetation displacement would occur with construction of the new maintenance yard (27,200 square feet). Additional displacement would occur because of the maintenance road (6030 square feet). An additional 19,470 square feet of temporary disturbance to vegetation would occur during construction activities.

Visitor parking and access road (51,300 square feet) and intersection improvement on Kansas Highway 156 (15,750 square feet) would permanently replace vegetation. Temporary vegetation disturbance would occur to approximately 26,900 square feet.

Elimination of about 16,200 square feet of vegetation would occur because of nonpaved interpretive trails. Temporary disturbance would occur to approximately 10,800 square feet.

Vegetation would be temporarily affected by underground placement of water distribution lines (61,500 square feet), utility lines (58,000 square feet), electric lines (41,000 square feet in road right-of-way), and gas service lines (8500 square feet). Disturbed areas would be revegetated.

Entrance signs would result in a net loss of prairie vegetation of about 150 square feet. Installation of the new entrance sign would permanently remove approximately 250 square feet of prairie vegetation. Removal of the existing entrance sign would require the revegetation of approximately 100 square feet.

Removal of the irrigation ditches would result in a temporary impact on approximately 70,000 square feet (1.60 acres). Revegetation of the disturbed areas would result in a restoration (net gain) of approximately 35,000 square feet (0.80 acre) of vegetation.

Removal and reclamation of nonhistoric roads (22,500 square feet), entrance road (60,300 square feet), gravel parking area (99,900 square feet), maintenance yard (27,200 square feet), and fee collection station (100 square feet) would require revegetation of approximately 210,000 square feet (4.82 acres).

*Synopsis of effect:* Permanent displacement of vegetation would occur to about 94,550 square feet (2.17 acres). Temporary effects to vegetation by construction would occur to nearly 165,580 square feet (3.80 acres) of previously undisturbed vegetation and 96,000 square feet (2.20 acres). Restoration of vegetation would occur to approximately 217,800 square feet (5.00 acres). Restoration of vegetation would exceed permanent displacement by 123,250 square feet (2.82 acres).

**Wildlife.** A limited number of small-sized wildlife would be temporarily displaced during construction. Some currently occupied small animal habitats would be removed by new impervious structures, but replaced and expanded by reclaimed habitat.

Mortality of a small number of small mammals and insects may occur because of construction activities, but no adverse effect on wildlife distribution or composition would occur. Effects of noise and construction activity would be limited to actual construction period. Revegetation of visual screen tree planting and restored prairie may slightly increase populations of some small wildlife species because of increased cover and forage.

*Synopsis of effect:* Approximately 3 acres of restored prairie habitat and 1½ acres of woodland habitat would added for wildlife.

**Threatened and Endangered Species.** Primary habitat for protected species does not exist at Fort Larned National Historic Site and no known protected species reside in the immediate area.

**Air Quality.** Short-term localized degradation of air quality would occur temporarily because of dust disturbance during construction activities. Long-term negative effects to air quality would not occur.

**Water Quality.** Surface and ground water would not be adversely affected. Removal of the downstream dam may restore water flow in the Pawnee River. The construction of a new water filtration and distribution system would improve the quality of the drinking water.

## Impacts on Cultural Resources

On-site modern intrusions, such as vehicular traffic, the highway bridge, irrigation ditches, and the handicapped parking lot would be removed or visually screened. All visible modern uses would be removed from the historic core and its structures, including restrooms and the water purification system.

All historic structures would be restored and all modern uses removed from them. The visitor would be able to visualize the site as it was over 100 years ago.

The reconstruction of the sutler's compound, the adjutant's office, and the stables would impact the archeological remains of the area, but this would be mitigated through a data recovery program.

## **Impacts on Visitor Use**

Impacts on visitor use are the same as described in alternative three, except that the visitor's average length of stay would probably increase more than expected in alternative three. This is due to the increase in facilities open to the public and the improved interpretive program.

## **Socioeconomic Impacts**

These impacts are the same as those described in alternative three, except that operations and maintenance costs would be higher because of the five reconstructed structures in this alternative.

## COMPLIANCE

### **NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (42 usc 4321 et seq.)**

The National Environmental Policy Act requires consideration of the environmental effects of proposed federal actions. The prescribed procedures ensure that public officials and members of the general public are able to review environmental information and impacts before decisions are made and before actions are taken on a project. The environmental assessment, which is integrated into this document, provides for review and further action under the act.

Following the public review of the *Draft General Management Plan/Development Concept Plan/Environmental Assessment*, the National Park Service will issue either a finding of no significant impact or a notice of intent to prepare an environmental impact statement.

### **SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED (16 USC 470 et seq.)**

The National park Service is operating under a programmatic agreement with the Advisory Council on Historic Preservation (ACHP) and the National Conference of State Historic Preservation Officers (SHPOs) implemented in August of 1990. That agreement provides for periodic consultation with ACHP and the SHPO throughout the planning process and allows either of those entities to participate as full planning team members if they so desire. The programmatic agreement also contains a listing of programmatic exclusions, which are actions that, because of the nature of the action and the minor impact on the resources involved, do not require further review and consultation with the ACHP or the SHPO. All other actions discussed in a plan must be further reviewed by those entities stage prior to implementation.

Both the Kansas State Historic Preservation Office and the Advisory Council on Historic Preservation were notified when the planning began for the Fort Larned General Management Plan Amendment, and both were invited to participate. Both offices have reviewed the task directive for this project, which outlined the need for the project and the issues to be addressed. The public review draft, outlining the alternatives developed and the NPS preferred solution, will be circulated to them for their comments during the public review period. A presentation of the alternatives may be scheduled for the SHPO if they so desire. Included as part of the GMP public review draft will be the environmental assessment, which the advisory council and the State Historic Preservation Office will formally review. The comments they may have regarding the document will be addressed in the final document.

A listing of the actions included in the planning alternatives and whether or not they require further review under the terms of the programmatic agreement is presented in table 14. When actions outlined in the amendment are implemented, those actions described in table 14 as programmatic exclusions will require only a completed XXX (Assessment of Effect on Cultural Resources) form before implementation. Actions not described as programmatic exclusions must undergo further consultation with the SHPO and ACHP under section 106 of the National Historic Preservation Act and the "Regulations for the Protection of Historic and Cultural Properties" (*Code of Federal Regulations*, title 36, part 800).

## THE ARCHITECTURAL BARRIERS ACT OF 1968 AND THE REHABILITATION ACT OF 1973, AMENDED 1978

All proposed facilities and programs will be accessible to special populations.

**TABLE 14: ACTIONS REQUIRING FURTHER SHPO AND/OR ACHP CONSULTATION  
UNDER SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT**

### **Alternative One: No Action**

|                                                                                                                                                                                                                                                                                              |                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Restore the interiors of shops building HS-3, new commissary HS-4, old commissary HS-5, quartermaster storehouse HS-6, commanding officer's quarters HS-8, and officer's quarters HS-9 to military period                                                                                    | Requires State Historic Preservation Officer (SHPO) and Advisory Council on Historic Preservation (ACHP) Review |
| Obliterate existing entrance road and bridge; construct new entrance road at the county road along the western boundary; construct parking on the north side of the river, west of the historic core area; construct pedestrian bridge to link the new parking lot to the historic core area | Requires SHPO and ACHP Review                                                                                   |
| Relocate remaining historic core area maintenance facilities to the new maintenance complex                                                                                                                                                                                                  | Requires SHPO and ACHP Review                                                                                   |
| Restore the parade ground, company streets, and landscape features to the military period                                                                                                                                                                                                    | Requires SHPO and ACHP Review                                                                                   |
| Restore or recreate native vegetative prairie cover                                                                                                                                                                                                                                          | Requires SHPO and ACHP Review                                                                                   |

### **Alternative Two: Modern Uses of Existing Historic Structures**

|                                                                                                 |                               |
|-------------------------------------------------------------------------------------------------|-------------------------------|
| Rehabilitate officer's quarters HS-9 for administrative offices                                 | Requires SHPO and ACHP Review |
| Provide accessibility to historic structures                                                    | Requires SHPO and ACHP Review |
| Maintenance building expansion; add new storage building and covered parking                    | Requires SHPO and ACHP Review |
| Bury utility lines                                                                              | Requires SHPO and ACHP Review |
| Restore the interior of commanding officer's quarters HS-8 to the historic period and refurnish | Requires SHPO and ACHP Review |

### **Alternative Three: Restore Existing Historic Structures**

|                                                                                                                                                                                                         |                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Construct new visitor center and administration complex                                                                                                                                                 | Requires SHPO and ACHP Review |
| Provide accessibility to historic structures                                                                                                                                                            | Requires SHPO and ACHP Review |
| Add wooden lean-to to old commissary HS-5                                                                                                                                                               | Requires SHPO and ACHP Review |
| Restore the interiors of barracks HS-1, new commissary HS-4, old commissary HS-5, quartermaster storehouse HS-6, commanding officer's quarters HS-8, and officer's quarters HS-9 to the historic period | Requires SHPO and ACHP Review |
| Expand maintenance facility                                                                                                                                                                             | Requires SHPO and ACHP Review |
| Construct pedestrian bridge                                                                                                                                                                             | Requires SHPO and ACHP Review |
| Bury utility lines                                                                                                                                                                                      | Requires SHPO and ACHP Review |
| Obliterate irrigation ditches                                                                                                                                                                           | Requires SHPO and ACHP Review |
| Construct interpretive trails                                                                                                                                                                           | Requires SHPO and ACHP Review |

|                                                                                                                                                                                                          |                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Remove roads, parking lot, and highway bridge                                                                                                                                                            | Requires SHPO and ACHP Review |
| Revegetation                                                                                                                                                                                             | Requires SHPO and ACHP Review |
| <hr/>                                                                                                                                                                                                    |                               |
| <b>Alternative Four: Reconstruct Key Structures and Restore Existing Historic Structures</b>                                                                                                             |                               |
| Construct new visitor center and administration complex                                                                                                                                                  | Requires SHPO and ACHP Review |
| Provide accessibility to historic structures                                                                                                                                                             | Requires SHPO and ACHP Review |
| Add wooden lean-to to old commissary HS-5                                                                                                                                                                | Requires SHPO and ACHP Review |
| Restore the interiors of barracks HS-1, new commissary HS-4, old commissary HS-5, quartermasters storehouse HS-6, commanding officer's quarters HS-8, and officer's quarters HS-9 to the historic period | Requires SHPO and ACHP Review |
| Reconstruct sutler's complex                                                                                                                                                                             | Requires SHPO and ACHP Review |
| Reconstruct adjutant's office                                                                                                                                                                            | Requires SHPO and ACHP Review |
| Reconstruct cavalry stable                                                                                                                                                                               | Requires SHPO and ACHP Review |
| Refurnish sutler's complex                                                                                                                                                                               | Requires SHPO and ACHP Review |
| Refurnish adjutant's office                                                                                                                                                                              | Requires SHPO and ACHP Review |
| Construct new maintenance complex                                                                                                                                                                        | Requires SHPO and ACHP Review |
| Construct pedestrian bridge                                                                                                                                                                              | Requires SHPO and ACHP Review |
| New water treatment and distribution system                                                                                                                                                              | Requires SHPO and ACHP Review |
| Bury utility lines                                                                                                                                                                                       | Requires SHPO and ACHP Review |
| Obliterate irrigation ditches                                                                                                                                                                            | Requires SHPO and ACHP Review |
| Construct interpretive trails                                                                                                                                                                            | Requires SHPO and ACHP Review |
| Remove roads, parking lot, and highway bridge                                                                                                                                                            | Requires SHPO and ACHP Review |
| Remove water treatment plant in old commissary HS-5                                                                                                                                                      | Requires SHPO and ACHP Review |
| Obliterate existing maintenance complex                                                                                                                                                                  | Requires SHPO and ACHP Review |
| Revegetation                                                                                                                                                                                             | Requires SHPO and ACHP Review |

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## CONSULTATION/COORDINATION

In August 1993 the *Draft General Management Plan/Development Concept Plan/Environmental Assessment* was reviewed by the Midwest Regional Office (MWRO) of the National Park Service, the State Historic Preservation Officer for Kansas (SHPO), and the Advisory Council on Historic Preservation (ACHP). Changes to address the comments from these reviews were incorporated into the document, and it was circulated to the NPS Washington Office for policy review. Comments from the policy review were addressed in April 1994, and the document was prepared for public review and comment in June 1994.

Public involvement activity began informally in April 1991 with newspaper interviews about the planning process for the park's general management plan. Media interaction continued throughout the preparation of the draft document with a variety of local and regional newspapers. The park also communicated with local and regional tourist attractions during this period to keep them apprised of the park's plans. On April 30, 1994, the Denver Service Center of the National Park Service displayed the document and its alternatives for the public at the park's annual open house. That display was followed by a presentation to the local support group, the Friends of Fort Larned. The document will be placed on formal public review in June 1994, and a public meeting and open house will be held in July 1994 to hear the comments of the public.

The agencies listed below have provided assistance and information in the preparation of this document and will receive copies of the draft document.

Staff, Kansas Department of Wildlife and Parks, Natural Heritage Program

Staff, Fort Larned National Historical Site

Staff, USDA Soil Conservation Service

Staff, National Park Service Midwest Regional Office

Ruth Olson, Santa Fe Trail Center

Cindy Wallace, Larned Area Chamber of Commerce and Pawnee County Economic Development Commission

Vern Steffen, Larned County Commissioner

Ron Arnold, Larned City Manager

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## APPENDIX A: HYDROLOGIC ANALYSIS OF THE PAWNEE RIVER

### HYDROLOGIC ANALYSIS OF THE PAWNEE RIVER IN THE VICINITY OF FORT LARNED NATIONAL HISTORIC SITE, KANSAS

By  
Michael Martin  
Hydrologic Technician, Water Operations Branch

#### INTRODUCTION

Fort Larned National Historic Site is located on the Pawnee River in central Pawnee County, south central Kansas. The fort grounds are approximately six miles west of the town of Larned, just south of Kansas State Highway 156, and within the Arkansas River Lowlands physiographic province. The fort grounds encompass a portion of the modern channel of the Pawnee River, an abandoned meander, and three alluvial aquifer wells (Figure 1).

In the early part of the 20th century, a small dam was constructed on the Pawnee River about two river miles downstream from the fort grounds. Sediment deposition has almost filled the channel behind the dam and rendered it ineffective for water storage. Park management is interested in removing the dam to restore a more historic appearance to the channel and, possibly, perennial flow to the river.

The Pawnee River has undergone considerable downcutting and channelization in the vicinity of the Fort. The banks and channel are covered with dense riparian vegetation. Flow in the Pawnee is intermittent, supported only by local storm runoff.

The purpose of this report is to present the results of a study that determined the extent and depth of channel aggradation at Fort Larned National Historic Site, as well as its effect on present stream flow. Throughout this report a distinction should be maintained between the terms historic and natural channels. The natural channel will mean the geomorphic configuration that was present throughout most of the river's history, while the historic channel will coincide with the morphology present at the time of the fort consignment.

The principal objective of this study is to reasonably predict the effects of dam removal on channel morphology and flow regime for the Pawnee River, in the vicinity of Fort Larned, Kansas.

#### PAWNEE RIVER AND FLOODPLAIN SURVEY

A survey of the Pawnee River was accomplished using a Lietz Set-4 total station during two separate trips in November 1991 and April 1992. Four points common to the two surveys were located and a

common datum was established between the park and the downstream dam. Cross section locations were established and surveyed beginning in the vicinity of the dam and moving progressively upstream.

A total of 77 points were surveyed including nine cross-sections in the present channel of the Pawnee, two dam elevations, a high water mark located on a bridge pier, three water-table elevations, and channel elevations of the abandoned meander located east of the parade grounds (Table 1). Elevations were taken relative to an arbitrary datum of 100 ft. assigned to a bench mark located approximately 200 feet west of well #1 near the park entrance from State Highway 156.

Table 1. Location and elevation of survey points in the vicinity of Fort Larned National Historic Site.

| Location          | Elevation (ft.) |
|-------------------|-----------------|
| Channel Above Dam | 83.46 (mean)    |
| Channel Below Dam | 73.92           |
| Bank              | 96.58 (mean)    |
| Oxbow Channel     | 91.00           |
| Water Table       | 74.66 (mean)    |
| Top of Dam        | 89.98           |
| High Water Mark   | 90.31           |

## RESULTS

The mean channel elevation above the dam was 9.5 feet higher than the channel elevation below the dam (Table 1). Elevations taken in the channel above the dam had a range of 1.3 feet over about 4500 feet of channel length, indicating a fairly uniform channel elevation as a result of sediment deposition. The mean bank elevation was higher than the mean channel elevation above and below the dam by approximately 13 and 23 feet, respectively (Table 1). The mean bank elevation was 5.5 feet higher than the oxbow channel elevation, and the mean elevation of the present channel upstream from the dam was about 7.5 feet below the channel in the oxbow.

The present channel in the vicinity of the Fort is about eight to nine feet above the water table (Figure 2). The channel elevation below the dam is slightly lower (0.7 feet) than the water table elevations measured on the Fort grounds. Additionally, surface water was observed in the channel of the Pawnee below the dam during the November survey.

The high water mark on the bridge pier north of the parade grounds appeared to represent a level of flow that was attained periodically. The elevation of this high water mark was slightly higher, 0.3 feet, than the top of the downstream dam (Figure 3), indicating that the presence of the dam places some control on water level in the channel.

## DISCUSSION

Morphologic changes in alluvial rivers over the last 150 years have been documented by Schumm and Nadler (1981); and Dunne and Leopold (1978). Prior to settlement, alluvial rivers draining the east slope of the Rocky Mountains are thought to have been straight, wide, braided, and supporting intermittent flow. [Between 1885 and 1897 irrigation raised water tables, and flood control resulted in lower peaks and more uniform flow.] With more available ground water and fewer peak flows to erode the channel and banks, riparian vegetation became well established on the floodplains, restricting flow and narrowing the channels. These rivers subsequently underwent a transformation from braided to meandering. Additionally, downcutting began in these alluvial valleys between 1880 and 1900. This downcutting is attributed to an increase in daily flows resulting from greater summer storm intensity and heavy stock grazing (Leopold, 1951).

Examination of the abandoned meander on the Fort grounds indicates that the Pawnee River also had a much different morphology in previous times. The channel width was greater (Figure 1), and the channel elevation was considerably higher as evidenced by the oxbow channel elevation (Figure 2). The elevation of the oxbow channel should be taken as a maximum channel elevation of the former Pawnee River because some sediment likely has been deposited in the meander after it was abandoned by the river. These observations are consistent with the findings of the previous researchers regarding downcutting and channelization, and suggest that the Pawnee has undergone morphological changes similar to that of the Platte and the Arkansas Rivers.

The time period that downcutting took place on the Pawnee is apparently prior to the time of fort consignment. Multiple personal observations indicate that the Pawnee River was already incised and channelized, with established riparian vegetation in the late 1850's. This is approximately 20 years earlier than previous estimates for the Platte and Arkansas, and may be indicative of natural downcutting as a result of river gradient increase, (Schumm et al., 1984). Additionally, the Pawnee River was originally of meandering form rather than braided, this is evidenced by the presence of numerous abandoned meanders in the vicinity of the river.

The dam was installed downstream of what is now Fort Larned National Historic Site between 1911 and 1915, after channelization

and downcutting of the Pawnee had occurred. The channel above the dam has aggraded, due to sediment accumulation through the monument. However, aggradation has not been great enough to return the river bed to its pre-incision elevation, as evidenced by the oxbow elevation. As a result of this aggradation, the channel in the vicinity of the fort is significantly higher than the local water table (Figure 3), thus eliminating base flow releases to the river in this area.

## CONCLUSIONS

### Channel Restoration

Observations of the Pawnee River indicate that as much as nine to ten feet of sediment has filled the channel in the vicinity of Fort Larned National Historic Site. Removal of the dam would cause erosion and subsequent downcutting, likely to the level of the channel below the dam. The amount of time required for complete erosion to take place is not predicted, but could be on the order of a few years or decades. The erosion and downcutting that would take place would serve to further alter the river morphology from its natural (pre-incised) configuration. This conclusion is supported by the observation that considerable downcutting has taken place since the river abandoned its previous channel, as is evidenced by the disparity of oxbow and present channel elevations. The resulting channel with greater incision, however, may more closely approximate the historic morphology, that present at the time of fort consignment.

Another consideration in dam removal is the short term, increased sediment load to the Pawnee River at times of flow. This sediment would ultimately be deposited at another, possibly undesirable, downstream location.

### Restoration of Perennial Flow

The measured water table elevations are considerably lower than the elevation of the channel in the vicinity of the Fort (Figure 3). Because most streams are supported by the local water table between periods of storm runoff (Driscoll, 1989) the disparity between measured channel and water table elevations supports the observation that considerable aggradation has taken place. Other factors such as prolonged drought conditions, over-pumping of the aquifer, or increased base flow to streams as a result of incision may cause a lowering of the water table. Data gathered by the United States Geological Survey (USGS) indicate that water table elevations have declined in central Pawnee County in the past few decades (Dague, 1987).

Complete erosion of the sediment behind the dam could possibly restore perennial flow to the Pawnee River, but this is by no means conclusive. Water table elevations measured in November of 1991

were at about the same elevation as the channel downstream from the dam, but were not significantly higher. Standing water that was observed in the channel downstream of the dam in November was not present in April, indicating that hydrologic communication existed between the channel and the water table for only part of the year. At no time was any discernable base flow observed anywhere in the Pawnee River channel.

### Decreased Flooding

River stage during high flows is apparently controlled by the presence of the downstream dam in the vicinity of the Fort. It can be reasonably concluded that removal of the dam and subsequent downcutting of the channel will reduce the river stage during times of flow and thus, reduce flood potential.

A decrease in river stage during high flows would almost surely be achieved through removal of the dam, with a resulting increase in degree of flood safety. This increased degree of safety may not apply to extremely high flows; i.e., 100- and 500- year floods, where the flood waters may break out of the channel upstream and inundate low lying areas. Without performing a detailed flood analysis of the Pawnee watershed, it cannot be conclusively stated how water surface elevations during large floods would be affected by dam removal. Given the size of the watershed and the flat topography, it is fairly safe to assume that the flood risk during high flows, 100- and 500-year recurrence interval floods, would not be greatly diminished.

### SUMMARY

The Pawnee River has undergone numerous morphologic changes in recent geologic time, the most striking of which is a narrowing and deepening of the channel thought to have occurred prior to fort consignment. Construction of the impoundment dam served to raise the channel bottom through sediment deposition. In the event of dam removal, it is reasonable to assume that some erosion would take place and at some time in the future, the channel upstream from the dam would reach equilibrium with downstream channel elevations. Perennial flow could possibly be restored but only with approximately ten feet of channel incision and resulting sediment discharge. If the water table elevation is lowered by pumping, then base flow to the Pawnee River probably can not be restored.

Restoration of the natural channel is probably an impossibility. The present channel morphology is the result of both natural and anthropogenic controls operating over an extended time period. The morphology of the abandoned meander located on the Fort grounds is probably representative of river conditions prior to European settlement and associated land use practices. Removal of the dam, however, may serve to restore the Pawnee River to the approximate

morphology present during original consignment of the fort, well before dam construction.

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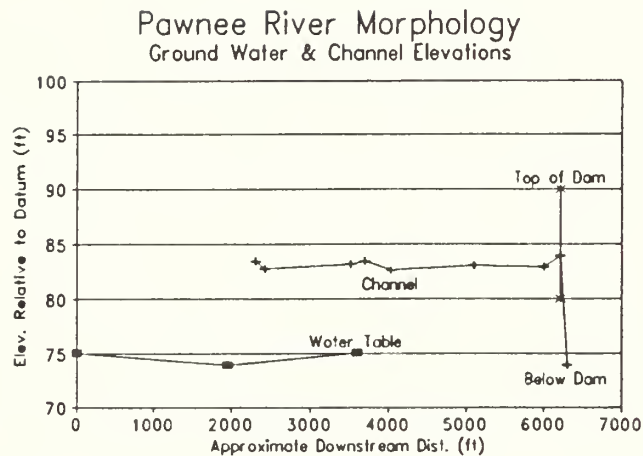


**Figure 2.** Comparison of channel elevations above and below the dam to water table elevations. X-axis begins at approx. upstream site boundary.

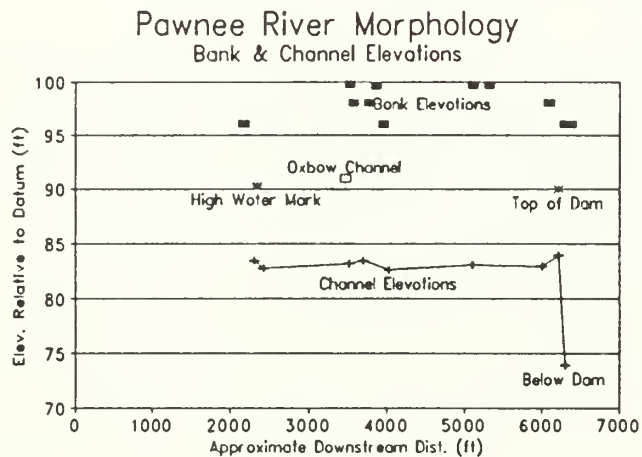


**Figure 3.** Comparison of bank elevations to present and abandoned oxbow channel elevations. The high water mark was measured on a bridge pier near the Fort. X-axis begins at approx. upstream site boundary.



## United States Department of the Interior

### NATIONAL PARK SERVICE

WATER RESOURCES DIVISION  
301 SOUTH HOWES ST., ROOM 353  
FT. COLLINS, COLORADO 80521



IN REPLY REFER TO:

September 10, 1992

L54 (479)

MWRO/FOLS/Floodplain

#### Memorandum

To: Keith Payne, Denver Service Center, Central Team

From: Gary Smillie, Hydrologist, Water Operations Branch

Subject: Extreme Floods on the Pawnee River in the Vicinity of Fort Larned National Historic Site, Kansas

In response to your phone conversation of August 24, 1991, with Mike Martin, the following is information regarding the nature of extreme flows in the Pawnee River. In particular, I understand that you have questions regarding the flash flooding potential and the need for additional flood investigations for the park.

Considering the mild slope of the Pawnee River watershed and lack of confinement except within the channel prism, we don't believe that flash flooding is a relevant concern in Fort Larned National Historic Site. With respect to your question about the usefulness of an updated flood study to take into account recent changes in the watershed, please refer to the trip report by Larry Martin and Gary Smillie dated August 28, 1991. As stated in the report, the existing FIMA map clearly shows the area of the fort to be within the 100-year floodplain. We believe it is unlikely that watershed changes have resulted in significant changes in the area inundated by the 100- and 500-year floods. We therefore recommend that you use the previously published flood depths of 2042.0 and 2044.7 feet for the 100- and 500-year floods, respectively (COE, 1971) for your planning needs.

If you have any questions concerning the work, please call Michael Martin at (303) 221-8323 or myself at (303) 221-8303.

*Gary M. Smillie*

cc: FOLS - Superintendent  
479 - Kimball, Jackson



## **APPENDIX B: SITE SELECTION ANALYSIS**

The site selection analysis is a process of systematic elimination based on criteria that describe a site suitable to accommodate a specific type of development. First, the applicable criteria are determined and their desirable range of conditions defined. Then the study area is described and existing site conditions analyzed. Next, the undesirable development conditions are mapped within the study area as they were defined in the selection criteria. The exposed areas remaining on the study area map are the best development sites for the proposed improvements.

### **WETLANDS**

Wetlands are protected from development under Executive Order 11990, which requires all federal agencies to consider wetland protection as an important part of their policies. The NPS policy regarding development in wetland areas (chapter 4:16) states, "The occupancy and modification of floodplains and wetlands will be avoided wherever possible."

There are three types of wetlands at Fort Larned: (1) riverine, intermittent, streambed, semi-permanently flooded wetlands; (2) palustrine, forested, temporarily flooded and scrub-shrub, temporarily flooded wetlands; and (3) palustrine, unconsolidated shore, temporarily flooded, diked and impounded wetlands. The first two categories exist along the riparian zone of the Pawnee River, and the last category is on the site of the dry oxbow lake.

All wetland areas at Fort Larned are thus considered undesirable as development sites, and are blacked out on the study area map.

### **FLOODPLAINS**

Executive Order 11988 requires that federally funded projects be protected from a 100-year flood unless there is no practical alternative. In addition, structures that contain irreplaceable documents or objects, including museums, record collections, artifacts, historic furnishings, etc., must not be located within a 500-year floodplain.

All of Fort Larned, except the Santa Fe Trail ruts site six miles away, is located within the 100-year and 500-year floodplains. For that reason, no map of the floodplains has been drawn. The U.S. Army Corps of Engineers, Tulsa District, has estimated the 100-year flood elevation to be 2,042 feet, and the 500-year flood level to be 2,044.7 feet above sea level. These elevations are only approximate because of several changes in the Pawnee River watershed that have not been considered since the last flood survey information was obtained. The Corps of Engineers has recommended that more contemporary measurements be made to establish a more reliable flood elevation and more accurate floodplain boundaries. The Corps of Engineers also recommends that any new structures be built above the 100-year flood level plus at least 1 foot.

While all floodplain areas are considered undesirable for development, flood-proofing and creative design solutions must be applied at this park in order to undertake any structural development.

## SLOPE

The importance of slope varies with the type of development, its scale, and its desired support systems. Unsuitable slopes may increase construction costs by necessitating excessive grading and special construction techniques.

Suitable slopes range from 1% to 8%, with 2% to 5% slopes being most desirable. Slopes less than 1% do not drain well, require extensive grading, and may impede the operation of gravity-flow utility systems. Slopes over 8% also require extensive grading and are best suited to developments with small footprints. At Fort Larned, the only slopes that exceed 8% are the banks of the Pawnee River. Since these riverbanks coincide with the riverine riparian wetland habitat, they are already eliminated from development consideration by Executive Order 11990.

## ARCHEOLOGICAL SITES

The region which now contains the Fort Larned National Historic Site has a long and colorful history associated with Native Americans, the Santa Fe Trail, western exploration, trade, settlement, the railroad, and the U.S. Army presence in the west. Because of this history it is likely that the fort environs still contain unexcavated archeological resources. To protect any archeological resources, known or unknown, three zones have been assumed by the planning team to assist in the selection of sites for new structural development.

1. *Restricted Zone*: No new development is allowed within this zone. This does not prohibit restoration or reconstruction of the fort to the historic period.
2. *Protected Zone (Old Santa Fe Trail Route)*: No development is allowed that would jeopardize or be detrimental to the historic integrity of the Santa Fe Trail resource.
3. *Cautionary Zone*: New development is allowed within this zone provided that it meets with all applicable National Park Service planning criteria and compliance requirements.

By establishing these three zones to assist in site selection, known and unknown archeological resources are protected, necessary development provided for, and new development directed to less sensitive archeological areas. Regardless of these zone designations, an archeological survey of the fort must be conducted prior to any development actions there.

## THREATENED AND ENDANGERED SPECIES

No threatened and endangered species of animals or plants are known to be present at either of Fort Larned's two properties. Six federally listed endangered or threatened species of birds have been identified within Pawnee County. No lands were removed from development consideration because of potential impact to threatened and endangered species. Should there be evidence of habitation by endangered species at the fort, those habitat areas would be removed from development consideration.

## MAXIMUM WALKING DISTANCE

A maximum walking distance contour was established to delineate the maximum distance that the visitor center could be from the fort. Any new development should be located no farther from parking than the existing parking-to-visitor center distance of about 800 feet. Ideally, this distance should be decreased if it is possible to do so while preserving the desired visitor experience. Measuring 800 feet from the

outer perimeter of the historic core fort buildings, a line was drawn to establish this maximum walking distance contour. Any new visitor center and parking lot development should be located within this contour to maintain efficiency and visitor acceptance.

## **VIEWSHED RESTRICTIONS**

Viewshed restrictions were mapped from the center of the historic parade ground outward to the limits of the park property to delineate potential development areas that could not be seen from the historic core and historic resources. By locating new development outside the viewshed of the fort core, the historic setting is preserved, the interpretive purpose advanced, and the visitor experience enriched.

## **VISIBILITY OF THE NEW VISITOR CENTER**

A new visitor center should be easily seen and recognized by visitors traveling on either Kansas Highway 156 to the north or the county road at the west edge of the park. It is important that the new visitor center be sited to allow for this easy recognition.

## **MINIMIZE PAVED AREAS**

The new visitor center should be sited to require the least amount of pavement possible, thereby reducing construction costs, stormwater runoff and associated erosion, glare from the sun, sound magnification, and heat gain, while still accommodating normal visitation levels.

## **ACCESS TO THE HISTORIC CORE AREA**

Historically, travelers to the fort would enter from either the southeast or southwest corner. The Santa Fe Trail narrowed at Fort Larned, funneling travelers to the fort. To present the historic scene as realistically as possible, the modern entrance to the fort should be along one of these two historic routes. Since there are no all-weather, high volume roads to the southeast corner (and also because the viewshed in that direction is more indicative of the plains topography) the best access route for pedestrian visitors would be from the visitor center to the southwest corner of the parade ground. The access would mirror the route of the Santa Fe Trail in that area, but the historic trail route would be protected through management zoning.

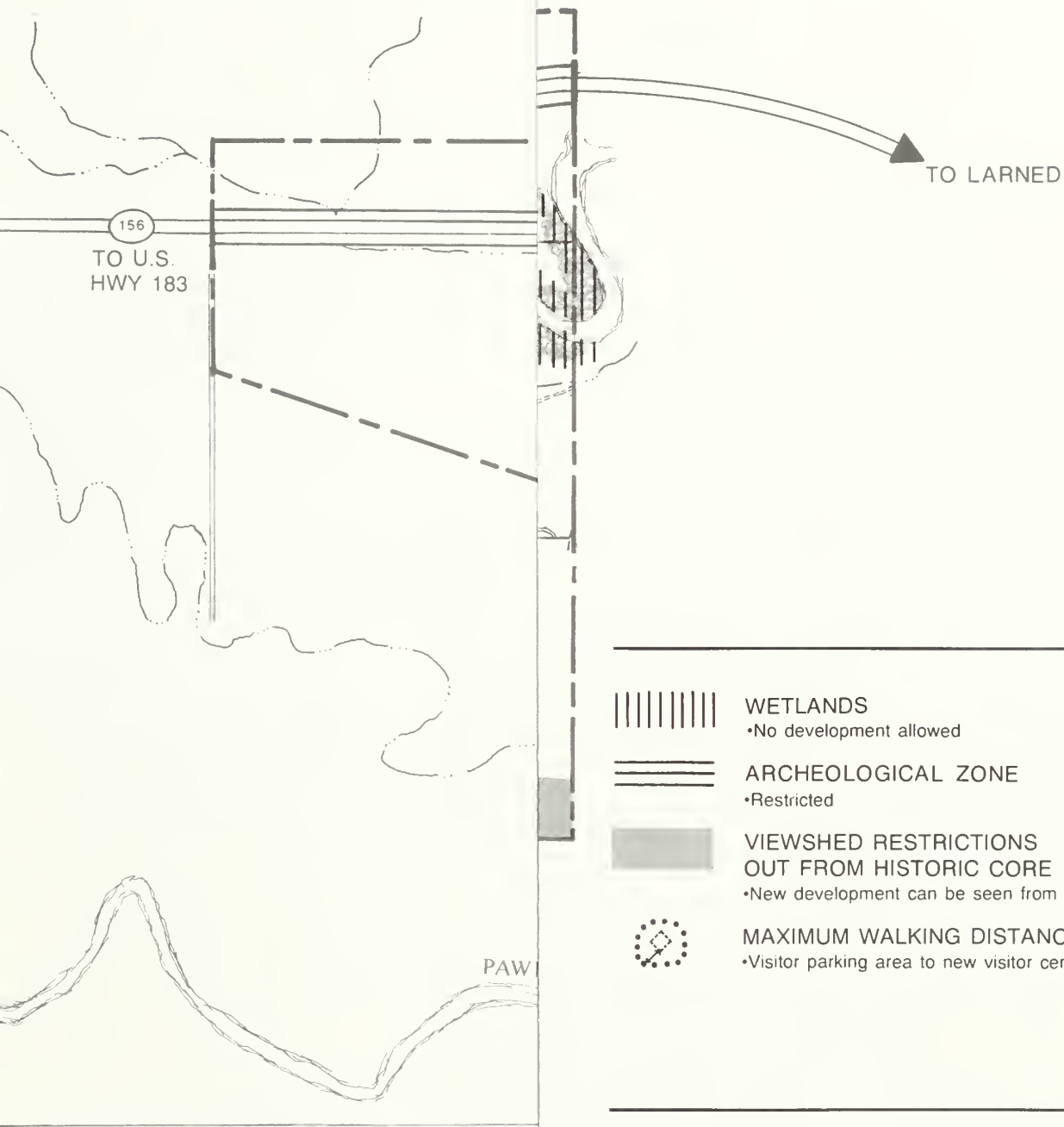
## **SOILS**

There are four primary soil series at Fort Larned: the Bridgeport, Hord, New Cambria, and Uly series. These soils were rated in the soil survey for Pawnee County, Kansas for their development suitability in the categories of building site development, recreational development, and sanitary facilities. Within those categories were several property uses similar to those envisioned for Fort Larned, including shallow excavations, dwellings with basements, small commercial buildings, local roads and streets, picnic areas, paths and trails, and septic tank absorption. Each soil was rated, relative to those uses, as having either slight, moderate, or severe limitations. Slight limitations are generally favorable for the specified use and limitations posed by those soils are minor and easily overcome. Moderate limitations indicate that the soil properties or site features are unfavorable for the given use, but the limitations could be overcome by special planning and design. Severe limitations are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance would be required to develop those uses.

The Bridgeport and New Cambria soils were found to have severe limitations overall. The Hord soil series has moderate to severe limitations, and the Uly soils have only slight overall limitations for envisioned development. For the purposes of this plan, only those soils having severe limitations were excluded from consideration as development areas. Only a small corner of the historic site contains the Uly soil with its slight soil limitations. All other soils at Fort Larned have severe limitations.

## **SITE SELECTION CRITERIA**

1. New construction must be on lands owned in fee by the NPS.
2. New construction should not occur on slopes greater than 15%. (There are none at Fort Larned.)
3. New construction should not be located in the 100-year floodplain. If the structure is to house artifacts, it cannot be located within the 500-year floodplain. All land in question is within the 100-yr and 500-yr floodplains; the historic structures were built in the floodplain and to move them, elevate them, or dike around them would be in conflict with the historic scene; so no artifacts could be stored within the historic structures, and a new building is required. New structures must be raised above, or otherwise removed from, the floodplain and therefore cannot be built within the historic core area where flood control measures would constitute a visual intrusion.
4. New construction cannot be on an archeological site. This may remove a majority of the historic core area south of the river.
5. No threatened or endangered species can be impacted by construction.
6. The new visitor center should be as close as possible to the historic core area without being visible from it. This would maximize accessibility for all visitors and eliminate any intrusions on the visual scene.
7. The new visitor center should be as close as practical to existing roads and in order to minimize any necessary road construction and associated costs.
8. New construction should be placed on previously disturbed or adversely affected land within the boundaries of fee simple NPS ownership. Undisturbed areas should be avoided and preserved. An archeological clearance for any construction or development site will be required.
9. Access to the historic core area should be along a historic route. This would generally mean along either the wet or dry routes of the Santa Fe Trail (on the north or south side of the river) and allowing entry to the historic core area from either the southwest or southeast corner. Any river crossing should be near an historic crossing point.



**WETLANDS**  
•No development allowed



**ARCHEOLOGICAL ZONE**  
•Restricted



**VIEWSHED RESTRICTIONS  
OUT FROM HISTORIC CORE**  
•New development can be seen from historic core area



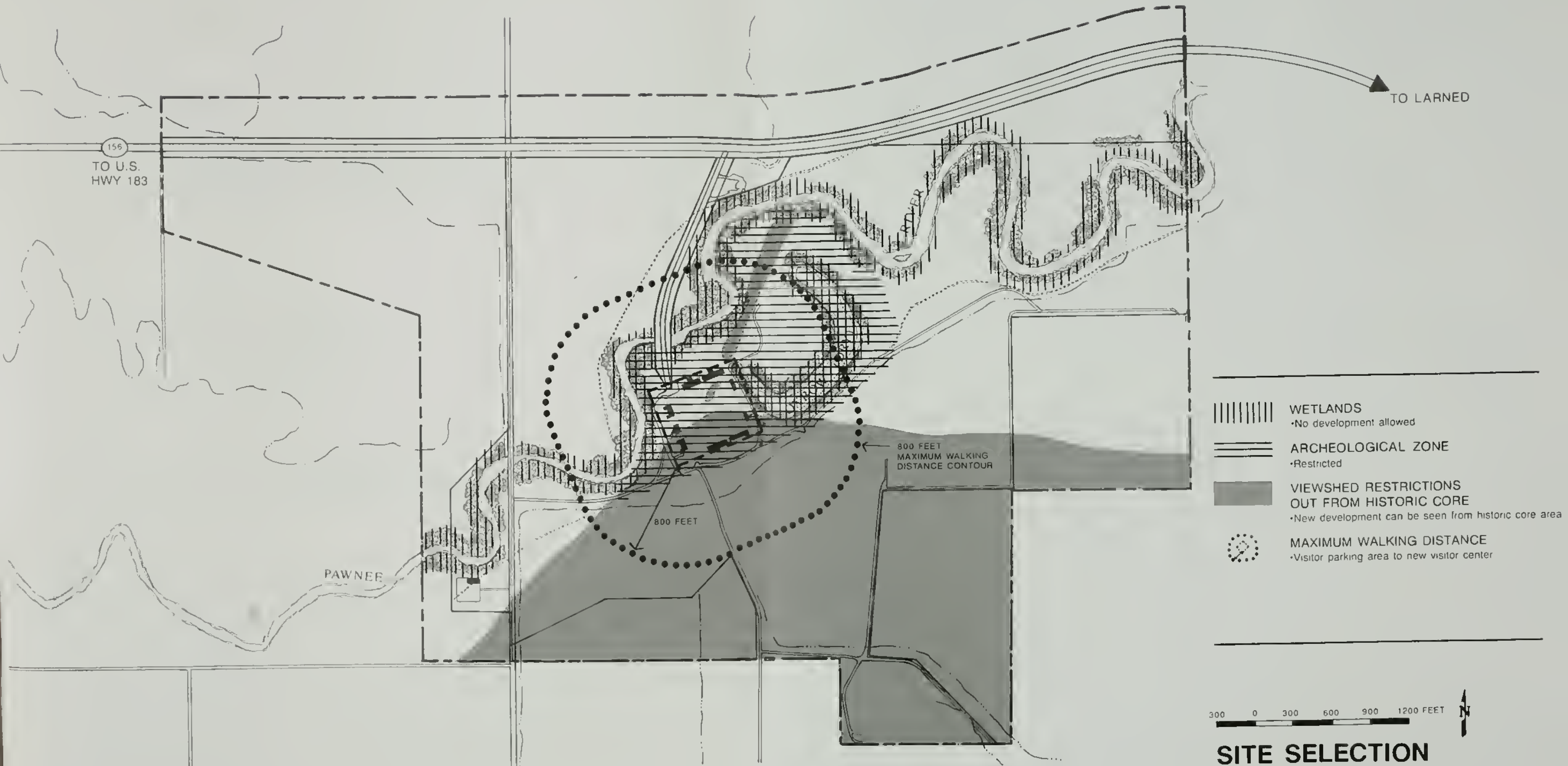
**MAXIMUM WALKING DISTANCE**  
•Visitor parking area to new visitor center

300 0 300 600 900 1200 FEET

## SITE SELECTION COMPOSITE

**FORT LARNED NATIONAL HISTORIC SITE**  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

DSC • 425 • 20.009A • DEC 93



## **APPENDIX C: DESIGN GUIDELINES**

### **INTRODUCTION**

The following general guidelines, with some possible design directions noted, should be used as aids in decision making rather than as formulas. They are intended to establish visual quality throughout the park.

The visitor center site design and architecture both contribute to the visitor's learning and understanding. Done well, these would provide a special setting in which the values and spirit of the resource and the interpretive program are clarified and reinforced. Visitor services, administration and maintenance areas, and all other noninterpretive facilities would be designed to compatibly fit the building and site without intruding on the visitor experience.

### **ARCHITECTURAL ELEMENTS**

#### **Historical Perspective**

There are clear and significant architectural themes to draw upon for this project because the various fort buildings have been preserved and restored to the historic period of 1868-1878. Structures of that time period must not be duplicated because of possible confusion as to resource authenticity and because duplication could diminish the importance of the original structures.

#### **Assessment of Structures**

Fort Larned is listed on the National Register of Historic Places and its nine surviving stone buildings are recorded by the Historic American Buildings Survey. The structures are good examples of American military post architecture during the Victorian period; their significance lies in their unity as a complex, in their high degree of historic integrity, and in their architectural features.

#### **Nonconforming Structures**

The maintenance facility is of modern design and materials, and located out of view of the fort.

#### **Architectural Guidelines**

The concept of sustainable design recognizes that human civilization is an integral part of the natural world that must be preserved and perpetuated if the human community itself is to survive. This is exemplified in a building design that follows principles of conservation and encourages their application to daily living.

A corollary concept is that of bioregionalism — that life is established and maintained on a functional community basis; that the communities (bioregions) are generally self sustaining, mutually supporting life systems.

Using the concept of sustainable design, the projects would minimize adverse effects on natural and cultural resource values, reflect their environmental setting, and maintain and encourage biodiversity. Facilities would be constructed and retrofitted using energy-efficient materials and building techniques,

and would be operated and maintained to promote their sustainability. They would illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use.

## Climatic Factors

The park is approximately 2,036 feet above sea level, and the land is mostly flat. The local weather patterns show typical interior continental daily and annual variations in temperature and precipitation. Temperatures average 78° in summer and 34° in winter, but extremes of 114° and -24° have been recorded. About three-fourths of the 24 inches of annual moisture fall during the growing season of April through September.

Average wind speed is 14 miles per hour, with winds 20 mph and above common throughout the year. The prevailing wind in the summer is from the south to southwest; in winter, it is north to northwest. There are only a few calm days annually.

Summer thunderstorms can be intense with severe winds, hail, and occasional tornadoes. The whole site is within the 100-year floodplain of the Pawnee River, but there are a series of low levees to control water in the park, and according to the NPS Water Resources Division, there is virtually no potential for a flash flood in this area.

## Building Considerations

**Orientation.** Building orientation can maximize possibilities for passive solar heating, help prevent unwanted summer heat gain, and help control the almost constant wind. Alignment can be used symbolically, to locate functions and welcome the visitors, while complementing and reinforcing the interpretive goal and desired visitor experience.

**Energy Conservation.** This is a continuing goal of the National Park Service. Building orientation, type of construction, quality of construction, and choice and placement of materials and equipment all play a part in the conservation of energy. In addition, renewable sources of energy and new developments in energy-efficient technology, including recycling materials and waste, should be used where appropriate and cost-effective. Properly addressed, these design decisions would reduce long-term operating expenses.

**Accessibility.** All facilities would be designed to meet guidelines of the most current *Uniform Federal Accessibility Standards* (UFAS) Fed. Std. 795, April 1988 to the greatest extent practical and possible without degrading the historic resources.

**Maintenance.** Low-maintenance native plant materials should be used at this site. Building materials should be selected for their low upkeep as well as functional and aesthetic properties, and should relate to the character of the historic park structures themselves.

## Building Design

**Form.** An architectural theme should be developed for any new buildings so that they fit into the site, avoiding a contrast that would attract attention to themselves at the expense of existing fort structures. Its roof, for example, can be the dominant building element that immediately and forcefully establishes the theme of a structure. At Fort Larned, such a roof should be compatible with historic precedent, and could be augmented by simplicity of building shape and siting.

**Mass.** Depending upon the required square footage for the facility, the mass of a building can be manipulated to minimize its apparent size. At Fort Larned, creating ell or linking building elements, for

example, could break up the appearance of bulk in a large structure. The visual impact on historic resources and surroundings would be reduced; existing patterns would be maintained.

**Scale.** The size relationship between new structures and their users should be considered equally as important as that between new and historic buildings. If massing of new buildings respects the massing of historic ones, maintaining the sense of scale should not be difficult. Choosing materials and a level of detail that represent a human scale upon approach, rather than a more monolithic and dramatic one, for example, would reinforce this effect.

**Rhythm.** Rhythm is created by repeating design elements, such as the sequence of solids (wall surface areas) and voids (window and door openings) in a building facade. Rhythm gives design a sense of order. This ordering of a building can be partly achieved by sizing elements appropriately for their interior function — for example, smaller windows in restrooms, larger ones in office areas and for viewing outdoor points of interest. A sense of military discipline at Fort Larned is reinforced by the relationships of the buildings to each other as well as by a symmetry and regularity of detail within the structures themselves.

**Symbolism.** A building form or shape can reinforce the intended interpretive theme of the park as well as indicate the purpose of the structure itself. A visitor center, for example, might allude to the headquarters building of a military post where one might go for information. This is not the same as imitating such a facility.

**Character.** A building can evoke formal or informal feelings. For this facility, the formality of an army post might reinforce the visitor's sense of place and time. The visual character of the visitor center must conform with the lines and spirit of the historic structures without imitating them. A new structure must not be confused with or mistaken for an historic structure, but can complement it architecturally.

**Building Entrance.** A building entrance sets the stage for the visitor experience, so special consideration should be given to enhancing that encounter in a visitor center. Functional and convenience equipment, such as telephones, vending machines, etc., should not be allowed to distract from the overall character. It is important, too, for the entrance to be clearly defined, leaving no question as to the location. In addition to its symbolic and informational functions, the passage should also provide both visitor and building interior with protection from snow, rain, and, especially in Kansas, wind.

## **Building Materials**

**Durability.** Building materials, both exterior and interior, should be selected for durability, resistance to vandalism, low maintenance, and aesthetic appeal. This means, for instance, that the traditional use of stone would be appropriate, but the soft sandstone of the historic buildings would not.

**Colors.** Colors should be selected to complement the site, existing buildings, and surroundings.

**Textures.** A variety or contrast of textures can enhance the building design by creating interest and appeal, and might also be used to distinguish any new buildings from the historic ones.

**Signing.** A consistent sign program stressing visual quality, clarity, and historic compatibility should be developed for the park.

**Lighting.** Exterior lighting is needed for evening activities and for security. Site lighting fixtures should be compatible with other site furnishings and development.

## Site Development

**Vehicular Access.** The entrance should be clearly visible, safe, and self explanatory. Consideration should be given to layout of the entrance road, its visual qualities, intended driving speed, and sequence of views.

**Parking.** Vehicle parking should be near the visitor center but not blocking primary views from the access road to the building. Parking lanes should accommodate the flow of pedestrians to the central structure, fit with the topography, and not cause undue impact to existing vegetation. Parking areas should be defined by planting bays and shade trees as possible.

**Circulation and walks.** Pedestrian routes should minimize conflicts with vehicles, provide direct access (in accordance with the UFAS guidelines), and offer pleasant encounters. Materials should be consistent with those of the historic period (1868-1878) within the historic core area to reinforce the intended visitor experience, complement the architecture, and still provide maximum accessibility. Materials commonly used in the historic period include compacted earth, gravel, and wood.

**Site Furnishings.** Site furniture provides important background support for visitor comfort and convenience. Their placement and design must reflect the architectural and historical period established for development. They must also be easy to maintain and vandal resistant.

**Fences, Handrails, and Walls.** There are places where these may be needed for screening, for directing visitors, or for safety, such as at grade changes. Their design should complement other landscape and architectural elements and be used consistently throughout the development.

**Signs.** Entrance, directional, and traffic control signs are all required. The design of the site itself should make access routes and circulation patterns fairly self evident so that the need for signs is minimized. Planning for signing should be consistent in style, design, and placement throughout the park.

**Plant Materials.** Plant materials should reinforce the design concepts and provide for visitor enjoyment. Native plant species should be chosen because of their hardiness, interpretive potential, and relatively low maintenance demands. The introduction of "exotic" species would undermine the visitor's understanding of vegetation in the area during the late 1800s.

**Grading and Drainage.** Grading and drainage must be positive and should blend with existing topography. Roads and parking should be designed with surface drainage as much as possible to minimize subsurface drainage structures. Any stormwater collected should be dispersed on site or placed unobtrusively into existing water courses.

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